ESTABLISHED IN 1872

PAPER TRADE JOURNAL

With Which Is Combined

Vol. XCV, No. 14 — PAPER — Thursday, October 6, 1932

Big Kraft Mills Consolidation Proposed

Directors of Mosinee Paper Mills Co. and Tomahawk Kraft Paper Co. Believe Merger of Two Companies Would Result In Attainment of Stronger Financial Situation—Duplication of Products Made In Two Plants Could Be Eliminated and Large Savings Made—Lessened Competition and Lowered Products Costs Could Be Effected

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., October 3, 1932.—Negotiations are under way for a merger of two of the large kraft mills of the Middle West, the Mosinee Paper Mills Company, Mosinee, Wis., and the Tomahawk Kraft Paper Company, Tomahawk, Wis. The consolidation will bring together aggregate assets of $8,000,000, of which Mosinee lists $4,900,000 and Tomahawk Kraft $3,197,000. In the holdings of the Mosinee company are 37,000 acres of virgin timber in Michigan.

The Mosinee company owns 200 acres at Mosinee, with a 100-ton mill. It also owns a 4,380 hp. hydro-electric station supplying 75 per cent of the required power. The Bay West Paper Company, Green Bay, Wis., a converting plant, is a subsidiary. For the fiscal year ending May 31, 1931, sales were $2,008,000 and there was a deficit of $350,000. The year before, the company made about $170,000.

Besides the Tomahawk company's mill at Tomahawk, it owns water power sites and flowage rights on the upper Wisconsin River, near Tomahawk, at Grandfather Falls and at Nigger Island. It normally employs about two hundred men. In the 1929-1930 period, the company showed a deficit of $85,000 and a profit of $20,000 the previous year.

Letters have been sent to the stockholders of each company by A. P. Woodson, president of the Mosinee company, and A. L. Kreutzer, president of the Tomahawk company, announcing that interest due on bonds October 1 will not be paid, and that it seems the best interests of the bondholders will be served by foregoing the payment and effecting the consolidation. The Mosinee company has outstanding $1,500,000 of 5½ per cent bonds, series of 1928, and the Tomahawk company, $1,150,000 of 6 per cent bonds issued in 1923.

Letters further state that competitive conditions have been very severe in the kraft paper industry and the selling price has declined drastically. It is stated that operating costs have been reduced but it has been impossible to reduce production costs so as to keep pace with the rapidly declining selling price. The companies have been able to operate continuously, but have been unable to make a profit which would produce funds available for the payment of interest. The physical properties have been well maintained and are in first class condition.

Directors of the two companies believe that by the proposed merger a stronger financial situation can be attained, and that duplications of products now made in the two plants can be eliminated and large savings accomplished. Lessened competition and lowered production costs also are evident.

Marinette Plant Ships Big Order

Thirty-eight carloads of tissue paper, claimed to be the largest single shipment in the world, were sent out of Marinette, Wis., in one day last week by the Marinette and Menominee Paper Company. The shipment was dispatched to various parts of the country to supply orders placed with the company sometime ago. The event was celebrated with a "prosperity" banquet of company officials and citizens, and a radio broadcast over station WTMJ, Milwaukee, Wis.

More employees have been added by the company, which is owned by the Continental Paper and Bag Corporation. It is believed the advance last week of $2.50 minimum per ton on kraft liner board prices will stimulate the demand in that line also. This marks the first advance in price in eighteen months. The demand for shipping containers is on the increase, and this is construed as a barometer of increased business, as the International products are used in practically all lines of manufacture and distribution.

Masonite Report Satisfactory

Stockholders of the Masonite Corporation, with mills at Laurel, Miss., held their annual meeting last week at Wausau, Wis., where the principal shareholders reside. Reports of the officers and department heads were read by James P. Gillies, general manager. In spite of the universal depression, the company had a good year financially, and it has increased its lines, placing several new products on the market. Among them is an attractive artificial tile. Production costs at the Laurel mill have been lowered, and the prospects for the coming year are excellent.

All of the directors were re-elected except, S. B. Bissell, resigned. He is succeeded by Charles J. Winton, Jr., Minneapolis, Minn. Others on the board are: Ben Alexander, C. C. Yawkey, A. P. Woodson, D. C. Everest and M. P. McCullough, Wausau, Wis.; W. H. Mason, Laurel, Miss.; Ernst Mahler, Neenah, Wis.; and James P. Gillies

(Continued on page 39)

Receiving Order Made Against Abitibi Company

H. W. Shapley, Acting for Canada Packers Co., States There Is Little Prospect of Unsecured Creditors Obtaining Anything Unless Some Reorganization or Compromise Scheme Is Evolved—F. C. Clarkson Appointed Liquidator

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., October 1, 1932—A receiving order was made against the Abitibi Power and Paper Company, Ltd., Toronto, which was ordered to be wound up by Justice Sedgewick at Osgode Hall on September 26. The application was made by Canada Packers Company, Toronto. F. C. Clarkson was appointed liquidator, at the request of the petitioners.

In an affidavit filed by H. W. Shapley, of the legal firm of Osler, Hoskin & Hatcourt, acting for Canada Packers Company, it was stated that the annual report of the Abitibi company for the year ending December 31, 1931, showed, as outstanding, shares of 7 per cent cumulative preferred stock of the aggregate par value of $1,000,000 and shares of 6 per cent cumulative preferred stock with par value of $34,881,800. The charter provided, it was said, that the 6 per cent should rank after the 7 per cent both as regards capital and dividends.

C. Wadge, assistant secretary of Canada Packers Company, filed an affidavit in which it was stated that $11,323 was owing to his company by the Abitibi company. Mr. Wadge stated that he was informed by Mr. Clarkson, receiver and manager of the Abitibi bondholders, that there were no funds with which to pay. Mr. Shapley's affidavit stated that there was little prospect of unsecured creditors getting anything unless some scheme of reorganization or compromise were evolved.

Boxmakers Firm Has Good Outlook

Canadian Wirebound Boxes, Ltd., Toronto, which are extensive manufacturers of paper boxes stands to benefit indirectly as the result of the Imperial Conference at Ottawa. Containers for shipment of commodities such as butter, apples, etc., are made by the company, which is claimed to produce the widest range of paper and wooden containers. The volume of business of the company has shown some recession again this year, but remains in a secure financial position. Dividends were paid on the class "A" shares up to July, 1931, at the rate of $1.50 per share per annum, and since then at the rate of $1 a share, the latest dividend being payable October 1. The stock bears a cumulative dividend at the rate of $1.50 per share. Hence $2.25 are in arrears. Improvement in business has been shown during the past few months. This includes the corrugated paper box department, which has felt the depression keenly for the past two years or more, and which has been subject to price-cutting. Some of the companies manufacturing similar lines, it is stated have been actually selling under cost. Interests identified with the industry, however, express themselves as satisfied that such practices have largely been eliminated now, and that the outlook for the industry is appreciably better. Marked improvement in business sentiment generally and some improvement in general business has been a source of encouragement.

Great Lakes Covers Operation Costs

Results of practically a full year's operations of Great Lakes Paper Company under the receivership instituted on July 13, 1931, are available with the issuance of a statement by the National Trust Company, acting as receivers and managers, which shows an operating profit of $213,816 available for depreciation, bond interest and unpaid receivership expenses. This profit for the period, July 13, 1931, to June 30, 1932, is the result of operating the mill at between 35 per cent and 40 per cent of capacity. Reserves set up total $202,357 and more than offset exchange on United States funds which amounted to $180,698. The report of the National Trust Company to the Bondholders Protective Committee states that no allowance to the receiver and manager has as yet been made or requested and that there are various liabilities for legal and other receivership expenses for which accounts have not yet been rendered. The exact final results of the operations for the period cannot be definitely determined until certain matters left open under an agreement dated August 7, 1931, between the receivers of Great Lakes Paper Company and Minnesota and Ontario Paper Company have been decided. This agreement, which provided for news print tonnage for Great Lakes Paper furnished on an allocation basis by Minnesota and Ontario Paper, is understood to have been extended to August, 1933. The amount of commission which receivers of Minnesota and Ontario Paper Company are entitled to deduct from remittances made to the receiver of Great Lakes Paper Company in respect of news print sales is in dispute. The claim for ten per cent commission is regarded by the National Trust Company as being excessive but provision has been made in the profit and loss figures for the whole amount of the commission claimed.

No Canadian Effect from U. S. Kraft Prices

Recent announcement of Southern Kraft Corporation of the United States that its prices for kraft liner board would be advanced $2.50 a ton will find little if any reflection in Canadian prices. The Canadian market for kraft has been largely independent in the past year or so and prices have not tended to follow the trend in the United States. In Canada, protection granted to the kraft manufacturers has been sufficient to exclude imports in any appreciable volume. United States manufacturers are reported to have been selling at very low prices, but application of duties has kept foreign kraft out of the Canadian market. Without this tariff Canadian mills would likely have been forced to close their plants, observers say. Kraft prices in Canada, therefore, though at points which are considered far from satisfactory, are well above levels prevailing in the United States. In view of this situation it is thought that any increase in the American prices will not bear directly on Canadian kraft values. Export markets formerly served by Canadian manufacturers have been restricted for some time. Dryden Paper, which used to ship kraft from Vancouver to the East now confines its sales to Canada.

Notes and Jottings of the Trade

R. I. Finlay, head of the United Paper Mills, Ltd., Spadina Avenue, Toronto, has returned from a pleasure trip to Newfoundland.

Fibre Boxes, Ltd., which is controlled by Dominion Boxboards, Ltd., is now working to put on the market a new product in the form of caddy board at its plant in Toronto. This board has an asphalt center and is lined

with glassine. Fibre Boxes, Ltd., will manufacture boxes for the general trade.

Subsequent to the closing of the Empire Conference at Ottawa the Canadian Trade Commissioner in London cabled to the Department of Trade and Commerce at Ottawa regarding a change in the tariff to the United Kingdom effective in September. The Department advises that according to cabled information received from London the duty on kraft wrapping and certain other papers has been increased to 25 per cent *ad valorem* when non-Empire. These were formerly 15 per cent or 20 per cent according to weight. A later cable states that the new rate applies only to papers weighing from 7 to 90 lbs. per ream, 20" x 30" -480, but at any rate the change is one that is favorable and should increase Canadian shipments to England.

Don Valley Paper Mills, Toronto, have put in the mails samples of their Aetweave blotting which is an attractive embossed sheet. It is designed as an insert for a portfolio of Indian Blottings sent out by the firm a short time ago.

A. P. Costigane, secretary-engineer of the Ontario Paper Makers' Safety Association, has returned from a visit of inspection to paper mills in Northern Ontario, including the Spruce Falls plant of Abitibi, the Mettagami plant at Smooth Rock Falls, and the Iroquois Falls mill. A general survey of the plants visited indicated that while they were not fully productive they were all keeping their physical assets in good shape. The accident prevention and compensation record up to now, he said, was satisfactory.

At the monthly dinner and meeting of the Toronto Club of Printing House Craftsmen on September 28, the chief feature was an address on "Boxboard Making" by O. A. Hutchinson, vice-president and manager of Dominion Boxboards, Ltd., Toronto. Following the address the diners went to the company's mill at the foot of Cherry street, where they saw the plant in operation.

John Martin, former widely known Winnipeg paper representative, and now with his son in the corrugated box manufacturing business in the Manitoba capital, was a caller on a section of the Toronto paper trade a few days ago.

It is announced that when the Port Royal Pulp and Paper Company, new owners of the Nashwaak pulp and paper mill, renew operations at the local plant, the sales organizations of the two Madawaska companies, which have been at Van Buren, Maine, will be moved to St. John. N. B.

On completion of business arrangements made during the past few days, the Woodstock Paper Box Company plant and equipment at Woodstock, Ont., is to be taken over by the York Paper Box Company, Toronto, a subsidiary of York Knitting Mills and allied Woods interests. The Woodstock plant will operate under the name of York Paper Box Company, Woodstock Division, and production will be continued as in the past. J. Canning, the present manager, will continue in charge, and it is expected that very few changes will be involved.

Knowlton Bros. Taxes Revised

[FROM OUR REGULAR CORRESPONDENT]

WATERTOWN, N. Y., October 1, 1932—Announcement was made this week that the firm of Knowlton Brothers, Inc., has secured a reduction of $1,200 on warehouse property in this city. The property is said to have been originally assessed for $2,400 and the revision is understood to have been made because of the fact that the building was demolished some time ago.

Agree To Cease Price Fixing

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., October 5, 1932—Marion Paper Company, Marion, Ind., and United Paper Board Company, Wabash, Ind., have signed a stipulation with the Federal Trade Commission agreeing to cease cooperating to fix prices or to make uniform the prices at which products shall be bought by or for them through a common buying agency.

These companies also agreed that they are not to enter into cooperative agreements to purchase products exclusively through a common buying agency at prices fixed by the agency or cooperatively by the companies or by the agency in cooperation with them.

They are to discontinue, under the purchasing arrangement with the agency, to refuse to buy goods from dealers who fail to refuse to sell products through the agency or at prices fixed by it alone or in combination with the companies.

Likewise, they are to abandon, under the purchasing arrangement with the agency, the practice of refusing to purchase from dealers whose offered products include goods obtained from dealers who have declined to sell through the agency at its fixed purchase prices.

Each company manufactured paper and paper board products from raw material types of waste paper known as "News" and "No. 1 Mixed", and also lesser grades. They purchased this from paper stock dealers.

Prior to May 1929, the two organizations were competitors in the purchase of raw materials. In July of that year, according to the stipulation, they put into effect a mutual plan for elimination of competition between them in their purchase of waste paper from stock dealers situated in various states in which was effective the same freight rate from the Chicago area and from Illinois, Indiana, and Michigan. Stock purchases were to be made for the companies at arbitrary prices fixed by A. F. Meisterheim of Chicago, with the approval of the corporations. Each corporation entered into a similar individual contract with Meisterheim, appointing him its agent for the purchase of waste paper in the Chicago and other markets. Each agreed to obtain through him a minimum annual purchase of waste paper at a stated commission.

Blake & Higgins Change in Ownership

BELLOWS FALLS, Vt., October 3, 1932—An important change in the ownership and officers of the paper mill corporation of Blake & Higgins at the south end of this village has taken place. The entire interest of F. H. Berold of Cincinnati has been purchased by Louis J. Robertson, Carroll W. Black and Charles D. Higgins, all of Bellows Falls. Mr. Berold purchased the controlling interest when Charles M. Blake died several years ago and has since been president, with the sales office in Cincinnati. The sales department will now be brought to Bellows Falls, under direction of Mr. Robertson. The new officers are Louis J. Robertson, president; Carroll W. Moore, vice-president and clerk; and Charles D. Higgins, treasurer. Mr. Higgins has heretofore been the paper maker and Mr. Black in charge of the office. Mr. Robertson is the son of Charles E. Robertson, and has always been connected with the paper manufacturing business, formerly with his father, and more recently as superintendent of the local mills of the Claremont Paper Company. He will now have charge of the sales department of the new company.

Mr. Berold is an owner of the Western Paper Goods Company, and other paper concerns of Cincinnati.

Chicago Paper Market Displays Improvement

Satisfactory Upturn Experienced In Volume of Business Transacted During September—Demand for Various Standard Grades of Fine Paper Strengthens—Sulphite Bond Situation Gradually Clearing—Kraft Paper Division Practically Unchanged

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., October 1, 1932—The consensus of opinion among paper trade executives in Chicago is that September was a month of genuine progress and improvement. The upturn in volume was not very heavy but it was a real upturn, nevertheless, and quite a number of paper merchants here are showing confidence in a better market to come. Efforts to improve some of these markets are expected to be made at various sessions of the National Paper Trade Association next week and, with demand evidencing a more spirited trend, chances for definite accomplishments along this line are said to be fairly bright.

At a meeting in Chicago held early in the week, at which representatives of practically every line were present, reports seem to indicate that nearly all markets shared in the improvement. Fine papers reported a strengthening of demand and the sulphite bond market, at least locally where the jobbers are doing a fine piece of work, also continued to show in a better light. Kraft papers were little changed over the previous week. The news print market felt the effects of the recent price alterations announced last week but indications of improvement in general business which are expected to result in an increase in national advertising lineage will probably result in better demand, say reports. Ground woods are improved. The board market showed a healthier tone and representatives are finding some satisfaction in new uses for paper board which are cropping up at fairly close intervals. The waste market, according to reports, also felt the stimulation and made a little progress in the right direction.

National Convention Plans

According to Noble Gillett, of the Chicago Paper Company, former president of the National Paper Trade Association and now a member of its advisory board, the stage is all set for the Fall meeting of the N. P. T. A. to be held at the Stevens Hotel, Chicago, October 3, 4 and 5. Arthur H. Chamberlain, executive secretary of the association, arrived in Chicago on October 1 and began the completion of a program which is to call all allied branches of the paper industry into important business sessions. Mr. Gillett has verified the statement that every effort will be made to arrange the meetings so that they will not conflict with each other and that the small committee meetings will be, for the most part, ruled out in favor of larger open meetings which all interested can attend. Allied associations connected with the parent body are planning either luncheon or business sessions during the three day program. This includes the coarse paper group, the tissue group, fine paper group, kraft and bag group and sectional bodies who will take the opportunity afforded by the Chicago conference to arrange some very important decisions affecting their particular branch of the paper trade. Reports from various Chicago offices indicate that market stabilization efforts will constitute the basis for any number of conferences among the different groups.

Salesmen Arrange Golf Contest

A possible field of over one hundred paper salesmen and executives will have the honor of introducing a new event into the annual meetings of the National Paper Trade Association when the National Paper Trade Golf Tournament gets under way on October 6 at the Olympia Fields Country Club. According to Harold Knott, vice president of the Middle Western Division of the Salesmen's Association of the Paper Industry, enthusiasm over the coming tournament, which is sponsored by the salesmen, is running high. On September 27 sixty paper executives had actually made reservations for the golf outing. They will have a fine special prize list to shoot at and the news that the event is to be made permanent, sponsored year after year by the salesmen, will be welcome to those who attend the National Paper Trade Association meeting in Chicago and who follow-up with the golf outing at Olympia Fields on October 6. The paper trade is urged to remember that the yearly event is also to be classified as "national" in every respect.

Terminal Allowance Hearing

Traffic executives of paper mills located in Wisconsin and served by the Chicago and Northwestern and the Chicago, Milwaukee, St. Paul and Pacific railroads appeared in Chicago on September 28 as witnesses in the investigation being conducted here by the Interstate Commerce Commission into terminal allowances. The case is officially known as "ex parte 104." The three principal witnesses, W. B. Dalton, Nekoosa-Edwards Paper Company, P. M. Wilson, Marathon Paper Mill Company and J. C. Justesen, Mosinee Paper Mill Company, all testified to the individual features of their problem in switching and spotting cars within their own yards and confirmed the fact that the railroads grant each company an allowance for doing this work. Considerable discussion was aroused over the fact that intrastate freight handled by the industries does not qualify for allowances due to a state regulation against such practices. Witnesses stated, under examination by representatives of the shippers, that they were not dissatisfied with the existing arrangements with the two railroads and had found them advantageous as well as most efficient. The belief that the shippers can perform their own switching and spotting more satisfactorily and efficiently than the railroads themselves was generally upheld.

D. F. Peck Optimistic

D. F. Peck, Chicago coarse paper merchant, threw an optimistic light on the paper trade in a recent letter written to the *Chicago Tribune*. Dated September 24 and published over the caption "Business is Good" the letter read as follows: "Our business for September shows an increase of 33⅓ per cent over the average of past months this year; 10 per cent better than last September and 7 per cent better than the average of 1931. I am vice-president and a director of the Crystal Tissue Company, of Middletown, Ohio, as well as their Chicago manager, and their business shows a wonderful increase and the number of orders and volume of tonnage from all over the country indicates it is not a local condition of improvement. All prices in our lines are on the upward trend. If people would pay their taxes and the local governments would pay their bills and salaries, Chicago would be in the midst of a boom, with no necessity of raising emergency relief funds."

Boston Paper Market Exhibits More Activity

Better Demand for Various Standard Grades of Paper Reported by Wholesale Paper Merchants —Fine Paper Business Generally Well Sustained—Bond Paper In Better Request Than of Late—Wrapping Paper Dealers More Cheerful

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., October 3, 1932—More activity and a greater volume of orders developed among the majority of wholesale paper dealers during the week. Even with houses which reported little or no improvement, the market held its own. In some instances, business, although better as a whole, was spotty. At one office a dealer remarked on the fact that business in fine paper was sustained up to the very last of the month, rather unusual. At another office, representing a company manufacturing fine paper, it was stated that September was a better month than August. Some new lines of fine paper have been put on the market. Bonds are in greater demand. Wrapping paper dealers are cheerful, with a slight improvement in the call for various lines. The price situation is less unsatisfactory than a few weeks ago, with No. 2 kraft sustained at .02½. More orders have been placed for printing manilas and various manila specialties.

A broader and livelier demand for box board, with orders generally for prompt shipment, encouraged dealers. With an improvement in the candy industry, which began last week, more fancy boxes and material for making them have been required. The demand for cartons for low-priced shoes, which are being produced in large quantities, has increased. As a result, manufacturers of board are experiencing a brisk demand from box manufacturers. Board prices are holding firm, with filled news at $30.00; chip board, $27.50; chip board for creasing, $27.50 @ $30.00; single manila lined chip, $37.50, and single white patent coated news board bender, $45 @ $55.00. It is understood that at least some board manufacturers are adjusting their schedules so as to avoid over-production. A number of the box factories have shut down temporarily on account of the Jewish holidays.

Paper stock business remains on an "even keel," although in some quarters the last two weeks have been somewhat quieter than the previous few weeks. Paper mills are showing more interest in rag stock, buying more freely, but roofing stock remains quiet, owing to the fact that most roofing mills have a tremendous supply on hand, having bought when prices were low. Mills using jute stock have not advanced prices. The gunny market remains the same as for the last few weeks. Manila rope is sluggish. Unless the mills can buy at a concession in price, they are not interested. With half a dozen mills in the market, kraft paper is in very good demand. Soft shavings are exceedingly scarce, and in good demand. According to an opinion expressed in the trade, the general situation will probably remain the same over the balance of the year, current business now showing more activity than in the earlier months. Values are unquotably changed.

News of the Trade

One of the new local enterprises which has begun operation is that of H. W. Jewett & Sons Company, Inc., which is manufacturing roll paper specialties at 29 Purchase street. Products include police and fire signal tape, adding machine rolls, cash register rolls and detail paper. The firm is also engaged in paper slitting, rewinding, flat cutting and paper and cloth sheeting. It does job slitting and sheeting. H. W. Jewett is president.

Plans are being made for the Fall Meeting and Banquet of the Boston Paper Trade Association, to be held November 14 at the Exchange Club.

Storrs & Bement Company has added to its lines Lewistrong Cover, a latex content cover paper, made by the J. P. Lewis Company, Inc., Beaver Falls, N. Y. The new line is a medium low-priced grade, manufactured in seven colors.

Carter Rice & Co., Corp., is handling three new lines. The company has just distributed to the printing trade a broadside of the new Oxford Polar superfine coated paper, made by the Oxford Paper Company, Rumford, Me. The manufacturers have been experimenting for some time with the aim of producing a paper with a brilliant white shade, high polish and extremely smooth feel, without sacrificing folding strength. Another paper the Carter Rice company has added is the Line-Tone Paper and Bristol, a low-priced product made by Linton Bros. & Co., Fitchburg, Mass., in a wide range of colors, with excellent folding qualities, in antique or smooth finish for printing fine screen half-tones. The third line is Saxon Japan, brought out by the Strathmore Paper Company, Mittineague, Mass., in accordance with its efforts to answer the demand for quality papers at low price.

Mrs. Arthur E. Ham, who has been ill at the Baker Memorial Hospital for several months, has improved so that she was recently taken back to her residence at Somerville. She was at the hospital at the time of the wedding of her son and unable to attend the ceremony. James L. Ham, of the firm of Arthur E. Ham & Sons, has returned from an extended honeymoon to Canada and New York State.

Frank A. Juckett, president of the Hurlbut Paper Company, South Lee, Mass., was in town last week in the interest of his company, calling at the office of Carter, Rice & Co., Corp., sole agent here for the Hurlbut lines.

The current issue of "How," published by Tileston & Hollingsworth Company and edited by A. V. Howland, contains timely messages to printers and analyses of the September sheet of the T. & H. calendar. The number is printed on Milton Cover, golden-orange, and Milton Text, wove, white.

The National Tag and Label Corporation, Marlboro, Mass., has been incorporated. There are 200 shares, $100 each, and 800 shares of common stock of no par value. James M. Portmore, 2 Solon street, Wellesley, Mass., is president and treasurer. Arthur E. Luce and Charles F. Glazier are the other incorporators.

Terre Haute Paper Co. Report

WASHINGTON, D. C., October 5, 1932—C. W. Griffin, an examiner of the Interstate Commerce Commission has prepared a proposed report in the case of the Terre Haute Paper Company against the Ann Arbor Railroad Company.

The examiner found that rates on paper board, in car loads from Terre Haute, Ind., and St. Mary's, Ohio, to points in official territory and to St. Paul and Minneapolis are not unreasonable, but in certain instances unduly prejudicial to Terre Haute and St. Mary's and unduly preferential of southern producing points. Undue prejudice would be ordered removed but reparation denied.

New York Trade Jottings

R. H. Scanlon, director of the Powell River Company, Ltd., news print manufacturers, of Powell River, British Columbia, is a New York visitor this week.

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Abitibi Power and Paper Company, Ltd., common and preferred issues, have been stricken from the trading list of the New York Stock Exchange, due to failure to maintain transfer offices.

* * *

William E. Ebbets, Sr., formerly with Coy, Disbrow & Co., has joined the sales staff of the Hummel-Ross Fibre Corporation, of Hopewell, Va., and will make his headquarters in the World Building, 65 Park Row.

* * *

There was an excellent attendance at the regular weekly luncheon and meeting of the Eastern Division of the Salesmen's Association of the Paper Industry, held at the Hotel Roosevelt on Monday last. Those present took part in an interesting round table discussion of prevailing business conditions.

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J. A. Quinlan, traffic manager of the St. Regis Paper Company, will discuss the new store-door delivery plan of the railroads which goes into effect on October 15, at the forthcoming luncheon and meeting of the Eastern Division of the Salesmen's Association of the Paper Industry, which will be held in the Hotel Roosevelt Grill, next Monday, October 10.

* * *

The board of Directors of the National Association of Waste Material Dealers, Inc., with headquarters in the Times Building, New York, at its meeting on September 22 endorsed and approved the action taken by the Waste Paper Institute in instructing its executive secretary to proceed to determine the legality of centralized buying of waste paper. In line with the resolution recently adopted by the Waste Paper Institute, a leading law firm specializing in anti-trust matters will be retained to advise the Institute and draw up the complaint which it will file with the Department of Justice. Should it be determined that the practice has been carried on in violation of the Sherman Anti-Trust Law or any other laws covering restraint of trade, some members of the Institute contemplate bringing suit for damages against those involved. Those in the waste paper industry irrespective of whether or not they are affiliated with the Waste Paper Institute, are assisting in the raising of funds to handle this important matter to a conclusion.

Prominent Foresters Visit Ranger School

CRANBERRY LAKE, N. Y., October 1, 1932—Recent visitors at the Ranger School here were Professor Ralph Hosmer, head of the department of forestry at Cornell University and Clyde Leavitt, who recently became connected with the New York State College of Forestry in an advisory capacity. The latter has been connected with forestry for many years and is regarded as a pioneer in the movement. He has served a term as president of the Canadian Society of Forest Engineers.

E. Godwin Company Formed

CINCINNATI, Ohio, October 1, 1932.—The E. Godwin Company has been formed here with a capital of $5,000 to manufacture and deal in paper bags. The company has leased a building at 309 East 2nd street and expects to begin operations soon. Ellsworth Godwin is the manager.

Slight Improvement in Indianapolis

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., October 3, 1932—The local paper market during the last week saw some slight seasonal improvement. Of course, there always are disappointments, and the chief is the extremely cool weather for the last fortnight, in contrast with last year, during which demand for summer specialties sank to almost nothing. There likely will be some more warm weather, but the trade is convinced the summer specialty demand is over.

While not influencing the demand to any marked extent, the trade hailed with delight a published story from Washington last Thursday to the effect that the Senate sub-committee would recommend a return to two-cent first class postage rates. The envelope manufacturers are said to be particularly hard hit with the present postage. For example here thousands of utility bills used to be paid by check, mailed to the utility. Now they are being paid in person, what with three-cent postage and a two-cent tax on checks. And it is the postage that is working the havoc for utilities report the number of checks issued has not fallen off. Every person paying a bill in person means another envelope sale lost.

Local printers report some prospects for direct by mail campaigns but the volume of this being done is not as large even as last year. There is some demand for fine paper, however. The news print demand is improving slightly. Seasonal influences are at work to cause this increase and there likely will be a steadier increase as cold weather approaches.

The box and container market also is in better shape this week. Demand continues to widen. Old customers are not buying much more, but new customers are coming into the market and the volume of inquiries being received is encouraging. Little change is seen in the paper stock situation. Some mills, however, are buying in slightly larger quantities.

New Union Bag Plant Busy

HUDSON FALLS, N. Y., October 1, 1932—Business conditions at the new bag producing plant of the Union Bag and Paper Company, are reported good and 78 machines are running steadily. Similar conditions prevail at the old bag manufacturing plant where the full equipment of 68 machines is in operation with a normal force. During the past week it was learned that a record mark for production of bags had been established which has not been equalled in several years and officials regard the outlook encouraging.

Announcement was made this week of the inauguration of a night shift in order to meet the increasing rush of orders and from now on a portion of the equipment in both plants will be operated. A number of new hands have been taken on for night operations and plans call for enlargement when necessary. The increased activity at the mills is already reflected in the greatly improved conditions in the business life of this section.

Taggart Bros. Increase Schedule

HERRINGS, N. Y., October 3, 1932.—An increased volume of orders necessitated the operation of the mill of Taggart Brothers & Co., on a schedule of seven days during the past week. The plant has been running steadily six days weekly for many months but the increased rush of orders made necessary the longer working schedule. It is possible that the extended schedules will be continued if orders for quick delivery are booked in large quantities. Virtually all of the employees are being steadily employed.

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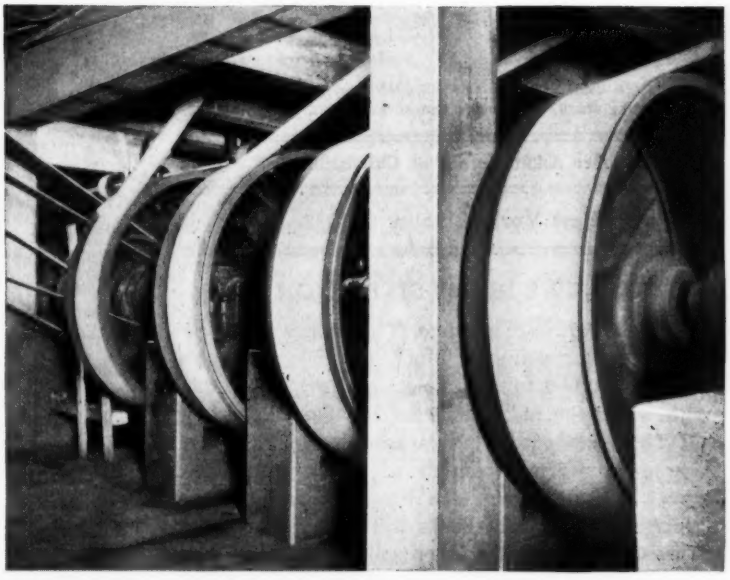

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PAPER TRADE JOURNAL
ESTABLISHED 1872

Published at 34 North Crystal St., East Stroudsburg, Pa. Executive and Editorial Offices, 10 East 39th St., New York, N. Y.

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Price, Per Copy, 10 Cents — United States, Per Annum, $4.00
Canada, including tax, $7.50; Foreign Countries in Postal Union, $6.00

Member Audit Bureau of Circulations

Vol. XCV New York, October 6, 1932 No. 14

THE NEWS PRINT SITUATION

Representatives of leading interests in the news print industry have been meeting in Montreal during the past week in further efforts to find a solution of the grave problems with which the industry is faced. Under the new basis on which news print prices have been established, and with no immediate prospects of increased tonnage, production costs, it is said, can hardly be met, and it seems to be assured that the banks will be called upon for further assistance. That the latter will call for the adoption of remedial measures before making further advances is certain. Hence the prospect is that the Banking Committee headed by E. W. Beatty, president of the Canadian Pacific Railway and a director of the Bank of Montreal, which committee has been conducting a comprehensive survey of the industry with a view to major consolidations, will press for amalgamations with renewed vigor and with more assurance of success.

So far as capital reduction of the various companies is concerned, the present stock market valuations of securities of news print concerns would appear to have made the matter comparatively simple, and to have paved the way for the needed scrapping of obsolete mills and equipment.

News print securities, which once furnished half the total turnover of the Montreal Stock Exchange, are now rarely dealt in, and current quotations for some of the former prominent issues offer a startling picture of the extent to which deflation has gone.

Current news print production of Canadian mills is running at the rate of 1,800,000 tons per annum, and the ratio of operation is less than 50 per cent. This ratio, however, is generally understood to represent a substantial obsolescence, which if scrapped would allow a stepping up of operations to around 70 per cent.

There is some difference in the estimates as to what the net average returns will be under the new price established. One estimate is that after allowing for transportation charges the price f. o. b. the mill will be between $38 and $39. It is stated that the lowest price at which efficient mills can produce profitably, before fixed charges, is $40 a ton. This, it may be assumed, is contingent on the mill activities being on a fairly active scale; hence with operations as at present, little more than 40 per cent of capacity, it would doubtless call for a higher price than $40 a ton f. o. b. mill to enable the companies to do more than break even before providing for bond and bank interest charges.

On the other hand it is stated that the latest cut in prices brings the average net return on news print to from $40 to $42 a ton in Canadian funds f. o. b. the mill, though this is admittedly not the case in one or two high cost mills.

No official announcement has been made by other companies in regard to the lower price quoted by the International Paper Company following the cut of Price Bros. & Co., and it is not expected that there will be any such announcement. Opinion is that these other companies will privately inform their customers that the International Company's price will be met.

Meanwhile there appears to be general assurance that no further price-cutting will take place in the industry during the next twelve months, this being one of the points dealt with at meetings of news print interests in Montreal during the week.

FOREST FIRES SHOW DECREASE

Forest fires in the United States were slightly less prevalent in 1931 than in 1930, according to the United States Forest Service's annual summary of reports and estimates from the States cooperating with the Federal Government in forest-fire control. Fires last year numbered 186,894; in 1930, 190,980 were reported. Area burned over decreased by 688,150 acres—from 52,266,460 acres in 1930 to 51,578,310 in 1931.

An important gain of the year was in holding forest fires to smaller average size in protected areas in the Northeastern, Middle Atlantic, Southeastern, and Gulf States. The average area per fire in all protected areas, however, was 103 acres, somewhat larger than usual.

Areas in the United States under some form of organized fire protection aggregated 400,749,510 acres last year, about two-thirds of the total acreage needing protection. On these areas, 61,854 fires burned 6,378,340 acres in 1931. Of the total area of all classes burned over last year, 45,199,170 acres, or more than 87 per cent, was on unprotected land.

Incendiarism was responsible for 24.9 per cent of the protected area burned last year, in contrast to an annual average of 17.1 per cent for the 1926-30 period. Incendiary fires in 1931 numbered 15,427, against an average of 7,638 for the 5-year period—an increase of 101 per cent. Sharp increases in incendiarism were noted in the Southeastern, Gulf, Central, and Pacific States, although State,

Federal, and community efforts controlled the situation better in the latter part of the season.

Carelessness of campers and smokers took a heavy toll. In the protected areas alone, the year shows a record of 5,236 campers' fires, against a 5-year average of 3,525, or an increase of approximately 50 per cent. Forest fires from smokers in protected areas also increased, with 14,488, against a 5-year average of 9,408.

Set against these records of human carelessness and wrongdoing are decreases of one-fourth in railroad fires, one-third in lumbering fires, and more than one-tenth in lightning fires. Debris-burning fires and fires from miscellaneous and unknown causes increased.

The Forest Service summary shows that forest fires damaged protected areas to the extent of approximately $17,018,100 in 1931. The damage to unprotected areas, according to incomplete estimates, was placed at $50,069,060, making a total forest-fire damage of more than $67,000,000 for the year, taking into account only tangible losses and not including such losses as scenic values, wild life, water-shed values, etc.

In addition to protecting the national forests, the Federal Government is now cooperating, under the Clarke-McNary law, in the protection of some 200,000,000 acres of State and privately owned lands. The money used for cooperative protection of State and privately owned lands in 1931 amounted to $7,216,885. Of this amount, the States furnished $3,839,305; private owners, $1,844,638; and the Federal Government, $1,532,942.

Altogether, 617,290,490 acres in the United States need fire protection, the Forest Service estimates. About 35 per cent of this area is without any organized protection.

Record Paper Order for Seminole

R. J. Cullen, president of Seminole Paper Company, a division of International Paper Company, announces that his company had received from Kroger Grocery and Baking Company an order for thirty-eight carloads of toilet paper, the largest single order for that grade of paper ever placed in the country. The order is being filled at the Continental Paper and Bag Corporation plant at Marinette, Wis., and is resulting in capacity operation of the mill.

Mr. Cullen, who is also vice-president of International Paper Company, declared his faith in results of courageous advertising and selling effort to move such large scale orders out of retail stores. Commenting on the unusual proportions of the order, particularly in these times, Albert H. Morrill, president of the Kroger system of 4,800 stores, expressed the belief that by such large-scale buying activity the business men of the country hold the possibility of recovery largely in their own hands.

Initial China Clay Shipment

[FROM OUR REGULAR CORRESPONDENT]

ALBANY, N. Y., October 1, 1932—The initial shipment of china clay to the local port for mills of the International Paper Company in Northern New York was received this week from the South and amounted to about 1,500 tons. The work of transferring the cargo to motor trucks is now under way and the task is expected to require several days. It is probable that similar shipments will follow.

Paper Production for July

According to identical mill reports to the Statistical Department of the American Paper and Pulp Association, production of paper was approximately 15 per cent below the level of the corresponding seven months of last year and inventories were 5 per cent smaller than a year ago. All major grades showed decreases. Production was in fairly close balance with demand in most grades as evidenced by the fact that almost all stocks were below last year's level.

For the first seven months of 1932 the production of wood pulp was approximately 16 per cent below the level of the first seven months of 1931, according to identical mill reports. Both the amount of pulp consumed by producing mills and the amount shipped to the open market showed substantial decreases from a year ago, the former being 14 per cent below the level of the first seven months of 1931 and the latter about 22 per cent less. Shipments of soda pulp to the open market were 41 per cent smaller than for the first seven months of 1931, while shipments of news grade sulphite and groundwood diminished 24 per cent and .36 per cent respectively. Shipments of bleached sulphite to the open market were 35 per cent smaller. Kraft pulp shipments to the open market were 1 per cent smaller during the seven months of 1931 while the amount consumed by producing mills was 20 per cent less than during the first seven months of 1931.

At the end of July, stocks of pulp on hand at producing mills were below the level of a year ago in the case of groundwood, bleached sulphite, kraft and soda pulp.

REPORT OF PAPER OPERATIONS IN IDENTICAL MILLS FOR THE MONTH OF JULY, 1932

Grade	Production Tons	Shipments Tons	Stocks on Hand End of Month—Tons
Newsprint	74,502	76,857	33,369
Book Uncoated	49,647	51,646	42,253
Paperboard	113,465	114,487	59,365
Wrapping	29,640	30,384	40,030
Bag	10,076	9,990	5,909
Writing, etc.	17,454	18,838	41,451
Tissue	5,214	5,902	6,543
Hanging	2,003	2,033	4,865
Building	3,194	3,481	3,606
Other grades	11,647	12,922	16,277
Total All Grades July, 1932	316,842	326,540	253,668
Total All Grades 7 Mos., 1932	2,680,821	2,689,745	253,668
Total All Grades 7 Mos., 1931	3,148,756	3,149,478	266,740

REPORT OF WOOD PULP OPERATIONS IN IDENTICAL MILLS FOR THE MONTH OF JULY, 1932

Grade	Production Tons	Used During Month Tons	Shipped During Month Tons	Stocks on Hand End of Month Tons
Groundwood	47,454	51,328	1,418	62,250
Sulphite, News Grade	20,047	18,653	1,436	7,739
Sulphite, Bleached	13,740	13,586	1,052	2,374
Sulphite, Easy Bleaching	1,185	1,152	22	1,211
Sulphite, Mitscherlich	4,249	1,866	2,528	2,388
Kraft Pulp	20,064	15,321	4,648	3,687
Soda Pulp	10,507	9,002	1,837	2,470
Other Grades	279	220	48	174
Total All Grades July, 1932	117,525	111,128	12,989	82,293
Total All Grades 7 Mos., 1932	1,073,898	977,130	90,424	82,293
Total All Grades 7 Mos., 1931	1,274,670	1,141,103	115,464	87,235

Norwegian News Print Prices

WASHINGTON, D. C., October 5, 1932—The Norwegian news print prices last month declined from an approximate level of $27.75 per metric ton to $24.25 f.o.b. Norwegian ports according to a report to the Department of Commerce.

Attempts were made during the summer to organize the Scandinavian news print industry for the purpose of limiting production. These attempts did not succeed according to the report, however, inasmuch as the Finnish producers showed little interest in joining such an organization. Norwegian mills are voluntarily curtailing production, in some instances up to 20 and 25 per cent of capacity, so as not to accumulate excessive stocks.

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Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

Alum Feed for Papermill Waters *

By Richard T. Barnes, Jr.[1]

Summary

The addition of alum to a papermill water is of questionable value unless the feed is correctly controlled.

A logical method of determining and controlling the alum feed for the best purification of a natural water is by the pH—alum curve.

Such pH—alum curves follow two general outlines dependent upon the type of purification required for the water in question.

For the soft waters of New England, alkali is needed in conjunction with the alum used for purification in order to obtain the highest efficiency from the alum feed.

Discussion of Problem

The natural waters used in papermaking usually require some kind of treatment to render them soft and clear. Papermaking progressed in the Connecticut Valley largely because of the excellent suitability of the waters occurring in that region. New England well waters are usually clear and not very hard and its open streams are soft, though frequently colored. Color is especially troublesome in the autumn due to falling leaves and other vegetable matter and the problem of removal is an important one.

Alum is the substance mostly used for the purification of waters, either alone or supplemented by an inexpensive alkali. In the softening of a clear water it has been the custom to feed alum alone. The removal of the coloring matter from water presents a difficult engineering problem. In these cases the alum is more frequently supplemented by alkali and expensive settling basins and filtering beds have been installed to facilitate the removal of the sludge. The difficulties are largely due to the inability of engineers to translate the methods used successfully in one plant to give equally satisfactory results in another.

It has been established in previous experiments that the best flocking of alum occurs within a decidedly limited range of pH values. Except with the very hard waters, the use of alum alone will probably not remove all of the impurities. The difficulty lies in adding enough alum to clarify the water and at the same time to maintain it at a pH of maximum efficiency. This difficulty may be overcome by the addition of alkali in some form prior to or together with the alum.

The disadvantages in the use of hard water in paper manufacture appear in connection with the holding of engine sizing and with obtaining the desired paper formation, due to the coagulation of the rosin size and of the fiber colloids in the beater liquor. In some cases an attempt is made to overcome this trouble by adding small amounts of alum on the theory that a slight lowering of the pH represents a corresponding softening of the water with proportionate relief from sizing and formation difficulties. Actually, with such amounts of alum, the optimum pH can rarely be obtained, none of the disturbing elements are removed from the water, the hardness salts are still in solution and are available for coagulation.

The effectiveness of the alum lies in the ability of the alumina flocks to carry down into the settling sludge both those ions which cause hardness and the coloring matter of surface waters. Its highest efficiency, therefore, must be under conditions of maximum and coarsest flocking.

In this work an attempt has been made to develop a method of determining for individual waters that feed which will result in the clearest and softest of water. Only such equipment as is available in the average mill laboratory has been used. Tables and curves from experimental data show the relationship between the alum feed and the corresponding pH values.

Experimental Methods

To each of a series of liter beakers containing 800 cc of the water to be tested was added 25 cc of N/10 NaOH. This was followed by the addition of 0.5 per cent alum in a series of increasing amounts. After vigorous and uniform stirring, the samples were allowed to settle for exactly one hour. This time limit was chosen as one which appeared reasonably practical and which gave in this small amount a clear supernatant liquid for testing. The clear solution was then decanted and the pH value determined by the quinhydrone method.

Interpretation of Results

Typical results for four of the papermill waters studied are given in Tables I to VI and in Figs. 1 to 4.

It will be noted from the column marked "pH change" in Table I that in the upper and lower portions of the table the active acidity increases apparently uniformly. In the 4th to 6th lines, however, the pH increase with relation to alum feed is very small. This is more clearly represented by the curves in Fig. 1 in which a break in the otherwise smooth curve is apparent. It is also very

* Presented by title at the fall meeting of the Technical Association of the Pulp and Paper Industry, Holyoke, Mass. September 14-16, 1932.

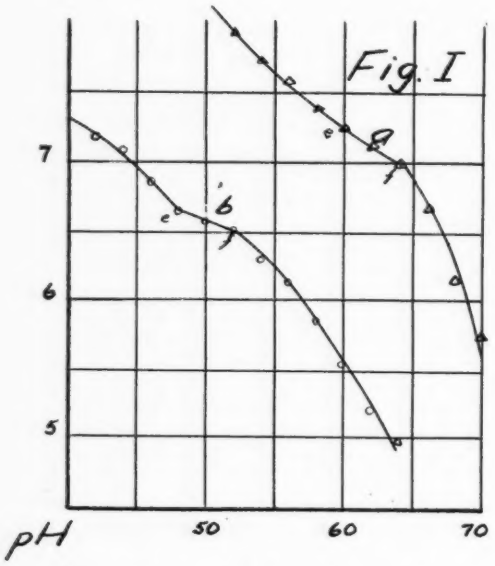
[1] Chemist in the laboratory of Jessie E. Minor, Springfield, Mass.

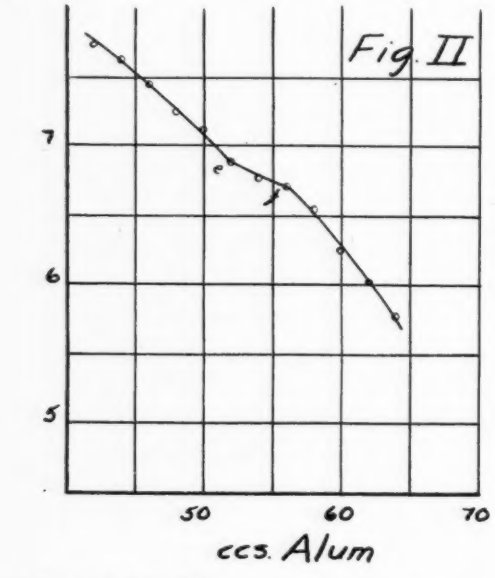
interesting to note that flocking is apparently at a maximum in this region.

Other waters were then tested in the same manner to determine whether the pH of the reaction region varied with the water. A comparison of the tables and curves given indicates that in every case a break indicative of reaction was found.

A comparison of the two curves in Fig. 1 made from the same water taken on different days when the original pH varied indicated that even for the same water the break does not always occur at the same pH or with the same alum feed. These results are illustrated by curve *a* as contrasted with water at the original pH in curve *b*. This would indicate that accurate control of such waters would involve frequent checking in order to maintain the best possible type of feed.

Curves resulting from the data obtained on a number of waters could be divided into two general classes. Curves of Figs. 1 and 2 typify one class of waters and curves 3 and 4 a second class.





Mill waters illustrated in Figs. 1 and 2 are colorless but have some hardness. Their curves are similar indicating that the impurities of each are reacting with the alum in the same manner.

In the upper part of the curve, alum and caustic react to form sodium aluminate, probably as follows:

$$Al_2(SO_4)_3 + 8NaOH \rightarrow 2NaAlO_2 + 3Na_2SO_4 + 4H_2O$$

As the quantity of alum increases a different reaction evidently takes place, possibly forming sulphuric acid as follows:

$$2NaAlO_2 + Al_2(SO_4)_3 \rightarrow 2Al_2(OH)_6 + Na_2SO_4 + 2H_2SO_4$$

Some of this sulphuric acid will react with the hardness salts of the water typified by the following:

$$CaO + H_2SO_4 \rightarrow CaSO_4 + H_2O$$

and some of it may be directly adsorbed by the alumina flocks, thus decreasing the acid effect on the pH value. When sufficient alumina, together with the adsorbed hardness salts and any free acid has accumulated, the mass will begin to slowly settle to the bottom at a rate dependent largely on the size of the masses or the coarseness of the flocking.

The optimum quantity of alum is that which will cause the maximum and most rapid settling. If insufficient alum is added, the sludge settlement will be slow and ineffective, hardness salts are not appreciably removed from solution, and the quality of the water has not been materially improved. Excess alum is also harmful as it acts as a solvent for the accumulated flocks, and it puts the hardness salts which have been gathered onto the flocks back into solution. The evident explanation for the distinct breaks in the curves at e-f and g-h is that the alum has the highest efficiency at this place. Below this range the flocks are being gradually brought into solution by the acid of the excess alum and the hardness salts are being liberated until, with sufficient alum, the flocks will disappear altogether.

TABLE I (Fig. 1b)

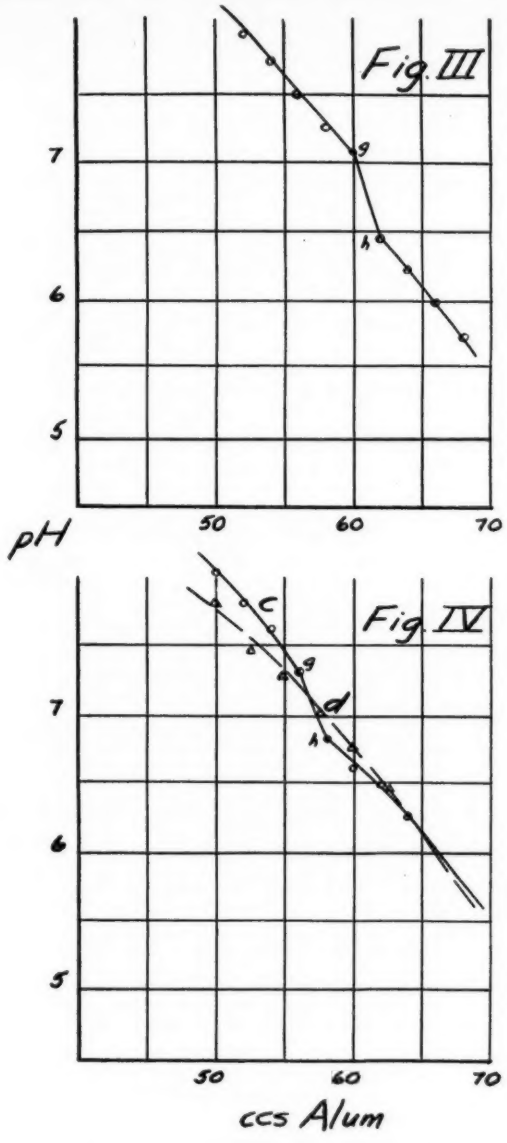
NaOH Added cc	Alum Added cc	pH	pH Change
25	42	7.7	..
25	44	7.04	0.13
25	46	6.87	0.17
25	48	6.66	0.21
25	50	6.58	0.08
25	52	6.52	0.06
25	54	6.36	0.22
25	56	6.13	0.17
25	58	5.86	0.27
25	60	5.56	0.30
25	62	5.20	0.36
25	64	4.97	0.23

TABLE II (Fig. 1a)

NaOH Added cc	Alum Added cc	pH	pH Change
25	42	8.52	..
25	44	8.42	0.10
25	46	8.37	0.05
25	48	8.28	0.09
25	50	8.16	0.12
25	52	7.93	0.23
25	54	7.74	0.19
25	56	7.59	0.15
25	58	7.38	0.21
25	60	7.23	0.15
25	62	7.10	0.13
25	64	6.99	0.11
25	66	6.58	0.41
25	68	6.15	0.43
25	70	5.76	0.39
25	72	5.54	0.22

TABLE III (Fig. 2)

NaOH Added cc	Alum Added cc	pH	pH Change
25	42	7.73	..
25	44	7.63	0.10
25	46	7.45	0.18
25	48	7.24	0.21
25	50	7.12	0.12
25	52	6.88	0.24
25	54	6.76	0.12
25	56	6.70	0.06
25	58	6.54	0.16
25	60	6.25	0.29
25	62	6.02	0.23
25	64	5.78	0.24



Tables IV to VI illustrate the results obtained, using the same procedure, on colored surface waters from nearby papermills. Figs. 3 and 4 illustrate this more clearly. The upper and lower portions of these curves resemble those for colorless waters. In the section g-1, however, a decidedly different reaction has taken place and the curves differ from those previously drawn. In this region a marked change in pH has taken place for a relatively small quantity of alum added as contrasted with a very small change of pH for a large quantity of alum added to the colorless waters. This difference may be explained by the theory that the alumina is being utilized by the coloring matter present and excess sulphuric acid is set free to give an abnormally rapid increase in acidity. In the case of colorless waters, due to the hardness salts present, it is the acid of the alum which is being used up rapidly leaving an abnormally small change in pH for the alum added.

As confirmatory evidence for the above explanation of the reactions at the portion of the curve g-h, a large portion of mill water IV was clarified with alkali and with the optimum quantity of alum as previously determined: then the clear water was used as a sample for carrying out the same procedure a second time. This clarified water differed from the original water only in being free of coloring matter which was adsorbed by the alumina. The smoothness of the curve *d* and the absence of any breaks such as occurred at g-h in the previous determination on this water confirms the theory that the reactions taking place at g-h are concerned with the original coloring matter present.

It is an interesting observation that the pH of the natural waters, in every case studied, lies within the reactive range. The small amount of alum which if used alone would be added without carrying the pH beyond the range of optimum efficiency would indicate the improbability of obtaining satisfactory results from alum without the use of alkali except in the case of very hard waters.

TABLE IV (Fig. 3)

NaOH Added cc	Alum Added cc	pH	pH Change
25	42	8.62	..
25	44	8.55	0.07
25	46	8.42	0.13
25	48	8.33	0.09
25	50	8.11	0.22
25	52	7.90	0.21
25	54	7.72	0.18
25	56	7.50	0.22
25	58	7.25	0.25
25	60	7.08	0.17
25	62	6.44	0.64
25	64	6.23	0.21
25	66	5.99	0.24
25	68	5.72	0.27

TABLE V (Fig. 4c)

NaOH Added cc	Alum Added cc	pH	pH Change
25	42	8.49	..
25	44	8.38	0.11
25	46	8.34	0.04
25	48	8.24	0.10
25	50	8.04	0.20
25	52	7.82	0.22
25	54	7.62	0.20
25	56	7.31	0.31
25	58	6.73	0.58
25	60	6.61	0.12
25	62	6.49	0.12
25	64	6.25	0.24

TABLE VI (Fig. 4d)

NaOH Added cc	Alum Added cc	pH	pH Change
25	50.0	7.82	..
25	52.5	7.47	0.35
25	55.0	7.27	0.20
25	57.5	7.02	0.25
25	60.0	6.76	0.26
25	62.5	6.45	0.31

TAPPI Permanence Committee

At the recent meeting of the Executive Committee of the Technical Association of the Pulp and Paper Industry, the Permanence and Durability Committee of the Research and Development Division was made a subcommittee of the Paper Use Requirements Committee of the same division.

The personnel of the committee as appointed by President Abrams includes the following: F. C. Clark, Skinner & Sherman Inc., chairman; John L. Parsons, Hammermill Paper Company; E. O. Reed, Crane & Co.; Edwin Sutermeister, S. D. Warren Company; Helen U. Kiely, American Writing Paper Company; and B. L. Wehmhoff, U. S. Government Printing Office.

The Story of Krebet

Seligman & Co., of 245 Fifth Avenue, New York, have just published an interesting booklet entitled "The Story of Krebet." The booklet contains a concise description of the company's Tapioca Flour factory in Java and is profusely illustrated.

The Effect of Inorganic Acids on the Physical Properties of Waterleaf Rag Bond Paper *

By T. J. Jarrell,[1] J. M. Hankins[2] and F. P. Veitch[3]

Introduction

Acid in paper has long been considered a factor in causing its deterioration. Various investigators have stated that acid in the finished paper may be due to (1) the use of aluminum sulphate in the sizing process, (2) a chemical reaction taking place in the paper after manufacture, or (3) the absorption of acidic sulphur oxides from the atmosphere.

Review of the Literature

In 1882 Feichtinger (*7*) reported that paper containing rosin sizing has an acid reaction due to sulphuric acid, which he regarded as injurious to the durability of paper. Wurster (*19*) and Herzberg (*10*), on the other hand, expressed the opinion that when sodium and calcium chlorides resulting from the use of bleaching powder are not thoroughly washed from the pulp and aluminum sulphate is subsequently added, aluminum chloride, a compound which readily gives off free hydrochloric acid, may be formed. Both these authors agreed that small quantities of hydrochloric acid attack cellulose. In 1898 the committe [Great Britain] on the deterioration of paper in discussing the causes of deterioration of rag paper (*6*) said:

* * * the disintegration may be generally referred to acidity. The acids may have been present in the original paper as made; or may have resulted from reactions going on in the paper itself after making; or lastly may have been due to products of gas combustion.

Winkler (*18*) treated paper with dilute solutions (1 : 100 to 1 : 50,000) of hydrochloric and sulphuric acids and after 3½ years' observation concluded that very small quantities of mineral acids are injurious to paper and that sulphuric acid causes greater deterioration than does hydrochloric acid.

Edlund (*5*) determined the amount of sulphuric acid present as aluminum sulphate, mainly in papers sized with animal sizing, by extracting the paper with warm water and titrating the extract with 0.1 normal potassium hydroxide, using phenolphthalein as indicator. He examined eight samples by this method and found from 0.3 to 1.6 per cent sulphuric acid. Edlund raised the question whether the presence of such large quantities of an acid salt, such as aluminum sulphate, might injuriously affect the durability of paper. Lester (*14*) treated cotton cloth with hydrochloric or sulphuric acid of various strengths and then dried the cloth by ironing. He found that the degree of tenderness caused by the two acids is about the same and concluded that the maximum allowable in cotton cloth appears to be 0.01 per cent of free hydrochloric acid. Coward, Wood, and Barrett (*4*) did some work on the effect of various acids, including hydrochloric and sulphuric, on cotton fabrics. They found that tendering of cotton fabrics in dilute aqueous solutions of acids is roughly parallel to the pH of the solution at constant temperature and is a function of the temperature of the solution. Hall (*9*) reported an investigation conducted at the Government testing institute in Stockholm, Sweden, on the permanence of paper. He concluded that acidity of paper may be caused by rosin sizing and warned against the use of an unnecessary excess of aluminum sulphate in making the rosin size. Hall claimed that the acid number of rosin-sized papers as determined by the Swedish Government testing institute, a method now often used in this country, should not exceed about 20, which corresponds to about 0.08 per cent SO_3. Hoffman (*11*) determined the effect of acidity on the bursting strength of about 24 samples of commercial papers, including wrapping, envelope, and label. He concluded that the higher the acid number of the paper and the lower the pH value of the water extract, the greater in general was the decrease in bursting strength when the paper was artificially aged by heating for 24 hours at 85 deg. C. He did not determine the effect on folding endurance. Hoffman (*11, p. 60*) stated:

If the acid number of paper is below about 25, as measured by the Swedish Government testing institute's method, the paper does not decrease appreciably in bursting strength when heated at 85 deg. C. for periods as long as 72 hours.

He also concluded from his data that when the pH of the water extract is greater than 4.5 there is no great loss in bursting strength when the paper is heated for 24 hours at 85 deg. Hoffman, in another article (*12*), expressed the opinion that the acidity caused by the aluminum sulphate used to set the rosin size is an important factor in the deterioration of paper.

On the other hand, Baker (*1*) points out that often an excessive quantity of aluminum sulphate is used with tub size and expresses the opinion that it causes rapid deterioration of the paper subjected to an accelerated aging test, as well as of paper in regular use. Richter (*15, p. 371*) calls attention to the well-known fact that acids in paper cause hydrolysis of the cellulose. He also states:

When the hydrolysis is intensified by increase in temperature or by increase in concentration of acid reagent, the deterioration proceeds rapidly and severe embrittlement occurs.

All these writers agree that mineral acids are injurious to paper or cellulose. All work on the effect of acids on paper that has come to the attention of the writers, however, has apparently dealt exclusively with finished commercial papers that had been sized, or sized and loaded and more or less calendered. In such paper there is obviously more than one factor that may be responsible, in part at least, for deterioration. Apparently no conclusive data have been obtained through a systematic investigation on the durability as measured by folding endurance, bursting strength, and tensile strength of unloaded waterleaf paper which has been treated with definite quantities of single acids or acid salts.

Experimental Procedure

The purposes of the investigation reported in this bulletin were: (1) To ascertain the deterioration, as indicated

* Presented by title at the fall meeting of the Technical Association of the Pulp and Paper Industry, Holyoke, Mass., September 14-16, 1932.
Contribution of the Bureau of Chemistry and Soils, U. S. Department of Agriculture, Washington, D. C., as Technical Bulletin No. 334.

[1] Associate chemists, Bureau of Chemistry and Soils.
[2] Junior chemist, Bureau of Chemistry and Soils.
[3] Principal chemist in charge, Industrial Farm Products Div., Chemical and Technological Research, Bureau of Chemistry and Soils.

by loss in strength and discoloration, of waterleaf unloaded all-rag paper treated with very dilute solutions of aluminum sulphate, sulphuric acid, and hydrochloric acid; and (2) to attempt to correlate acidity with deterioration.

For this investigation 13 by 16 inch sheets of waterleaf unloaded white bond paper, all of which were made at the same time on a Fourdrinier machine in a paper mill making high-grade bond paper, were used. Each sheet was soaked in distilled water at room temperature for 15 minutes in order to remove any water-soluble substances, and then dried in air at room temperature. This paper had a relatively high folding endurance, which was not materially decreased by heating for 72 hours at 100 deg. C. The water extract had an average pH value of 7.85. The stock was composed of new white rags in the proportion of 75 per cent linen and 25 per cent cotton. It was free from rosin and glue but contained a trace of starch. The paper weighed 21 pounds per ream of 500 sheets, 17 by 22 inches. had a thickness of 0.0045 inch, and contained 0.2 per cent ash.

The copper number was determined on 1.5 gram of the ground sample by the Braidy method (*2*), which directs that the Fehlings solution be replaced by a solution of copper sulphate made alkaline with sodium carbonate and sodium bicarbonate instead of alkaline tartrate. The cuprous oxide was dissolved in molybdophosphoric reagent, and the blue solution was then titrated with standard potassium permanganate to a faint pink color as described by Gault and Mukerji (*8*).

The alpha-cellulose was determined in 5 gram of the ground sample by the method described by Burton and Rasch (*3*), modified by filtering through a fritted-glass Jena crucible instead of through a cotton cloth.

The following alpha-cellulose and copper number results, calculated on moisture-free and ash-free basis, were obtained: Unheated paper, 97.2 per cent and 0.64; paper heated for 72 hours at 100 deg. C., 96.5 per cent and 0.81.

Solution of various strengths of chemically pure aluminum sulphate ($Al_2(SO_4)_3.18H_2O$) and sulphuric and hydrochloric acids were carefully prepared. These solutions were applied to the sheets by allowing one sheet, or subsample, folded to half its original size, to soak for 15 minutes in 500 cc of the solution. The soaking was carried on in a shallow porcelain-lined pan, and the paper was kept completely immersed in the solution during the entire period. At the end of the 15-minute period the sheet was unfolded to its original size and removed from the solution. The excess of the treating solution was shaken off by gently swinging it back and forth several times. It was then placed smooth on a glass plate and allowed to dry in a horizontal position. When dry it was cut in two equal parts. One part of each treated subsample and one untreated control were placed in an electric air oven and heated for 72 hours at 100 deg. C. The other part of each subsample was ground fine enough in a Wiley mill (*17*) to pass through a sieve having circular holes 2 mm in diameter and then placed in sampling bottle for acidity determinations. All heated subsamples were conditioned for at least 48 hours (*13*) at 50 per cent relative humidity and 70 deg. F. Folding endurance and tensile strength in both directions, and bursting strength tests were then made on them. Each result reported in the tables is an average of at least 10 tests. The folding endurance and tensile strength tests were made with the Schopper machines and the bursting strength with the Mullen tester.

A measure of the discoloration of the paper was also made on the heated subsamples by determining the percentage reflection of light with reference to the surface of a magnesium carbonate block. This was measured by means of a polarization photometer. The light source was a magnesium carbonate block illuminated symmetrically by two 500-watt lamps and viewed normally through a mono-chromatic blue filter. The paper to be tested was fastened over half the magnesium carbonate block so that it covered one-half of the field of view in the photometer. The angular setting for a match was determined three times and averaged. The paper sample and the magnesium carbonate block were then reversed, and the new angle of match was determined three times as before. The percentage reflection was then calculated by multiplying the tangent of the smaller angle of match by the cotangent of the larger angle.

Total acidity was determined by a modification of the Minor method (*16*), which directs that the titration with 0.01 normal NaOH be conducted in the presence of the ground paper. The details of the method used in this work were as follows: 1 gram of the ground sample was transferred to a 200 cc pyrex glass Erlenmeyer flask, and 100 cc of carbon-dioxide-free distilled water of room temperature and having a pH value of 7 was added. One-half cubic centimeter of phenolphthalein (0.5 gram dissolved in 100 cc of alcohol) was added, and a slow stream of carbon-dioxide-free-air was allowed to bubble into the solution for five minutes. While a slow bubbling of air was continued, the solution was titrated slowly with 0.01 normal NaOH until a definite pink color was permanent for at least three minutes. A correction was made for a blank determination by using water and phenolphthalein alone. All results, including those obtained on samples

TABLE I.—EFFECT OF HEATING FOR 72 HOURS AT 100 DEG. C. ON PHYSICAL PROPERTIES AND COLOR OF UNTREATED WATERLEAF ALL-RAG BOND PAPER

Subsample No.	Folding endurance: Transverse direction Double folds	Folding endurance: Longitudinal direction Double folds	Folding endurance: Average both directions Double folds	Bursting strength Points	Tensile strength [1]: Transverse direction Kg	Tensile strength [1]: Longitudinal direction Kg	Tensile strength [1]: Average both directions Kg	Variation from strength of unheated controls: Folding endurance Per cent	Variation from strength of unheated controls: Bursting strength Per cent	Variation from strength of unheated controls: Tensile strength Per cent	Acidity pH, of water extract	Reflection of blue light [2] Per cent
NOT HEATED												
1	579	2,330	1,455	37.5	....	....	....	....	....	....	7.70	83.5
2	875	2,033	1,454	35.9	....	....	....	....	....	....	7.80	87.0
3	604	2,433	1,519	37.5	....	....	....	....	....	....	8.00	83.0
4	493	2,107	1,300	37.6	....	....	....	....	....	....	7.60	85.4
5	644	1,981	1,313	39.0	....	....	....	....	....	....	8.00	88.2
6	734	2,396	1,565	35.0	....	....	....	....	....	....	8.00	86.6
Average	655	2,213	1,434	37.1	4.2	8.1	6.15	....	....	....	7.85	85.6
HEATED												
1–1	782	2,127	1,455	38.3	....	....	....	0	+2.1	....	....	84.8
2–1	603	2,358	1,481	39.7	....	....	....	+1.9	+10.6	....	....	86.0
3–1	630	2,313	1,472	38.6	....	....	....	—3.1	+2.9	....	....	84.2
4–1	584	1,717	1,151	38.0	....	....	....	—11.5	+1.1	....	....	87.3
5–1	726	1,726	1,226	38.6	....	....	....	—6.6	—1.0	....	....	85.1
6–1	576	2,425	1,501	41.2	....	....	....	—4.1	+17.7	....	....	89.1
Average	650	2,111	1,381	39.1	4.6	8.1	6.35	—3.7	+5.4	+3.3	....	86.1

[1] All tensile strength tests were made on strips 15 mm wide.
[2] Discoloration is indicated by a decrease in the percentage reflection of blue light.

TABLE II—EFFECT OF ALUMINUM SULPHATE ON PHYSICAL PROPERTIES AND COLOR OF WATERLEAF ALL-RAG BOND PAPER HEATED FOR 72 HOURS AT 100 DEG. C.

Subsample No.	Strength of $Al_2(SO_4)_3 18H_2O$ Grams per liter	pH of treating solution	Folding endurance after heating: Transverse direction Double folds	Longitudinal direction Double folds	Average both directions Double folds	Bursting strength after heating Points
Heated control			650	2,111	1,381	39.1
A-1	4	.....	0	0	0	15.3
A-2	4	.....	1	1	1	20.4
A-3	4	.....	0	0	0	16.6
Average	4	3.70	0	0	0	17.4
B-1	2	.....	9	9	9	29.6
B-2	2	.....	11	22	17	27.2
B-3	2	.....	11	22	17	26.7
Average	2	3.90	10	18	14	27.8
C-1	1	.....	69	150	110	31.5
C-2	1	.....	78	267	173	36.0
C-3	1	.....	193	286	240	39.3
Average	1	3.80	113	234	174	35.6
D-1	0.4	.....	347	791	569	38.4
D-2	0.4	.....	503	1,050	777	39.0
D-3	0.4	.....	369	1,151	760	39.0
Average	.4	4.00	406	997	702	38.8
E-1	.2	.....	387	1,762	1,075	36.8
E-2	.2	.....	540	1,496	1,018	38.0
E-3	.2	.....	395	1,449	922	38.0
Average	.2	4.20	441	1,569	1,005	37.6

TABLE II—EFFECT OF ALUMINUM SULPHATE ON PHYSICAL PROPERTIES AND COLOR OF WATERLEAF ALL-RAG BOND PAPER HEATED FOR 72 HOURS AT 100 DEG. C.—Continued

Subsample No.	Tensile strength after heating: Transverse direction Kg	Longitudinal direction Kg	Average both directions Kg	Variation from strength of heated controls: Folding endurance Per cent	Bursting strength Per cent	Tensile strength Per cent	Acidity of unheated paper: Total calculated as parts SO_3 per 100,000 parts paper	pH of water extract	Reflection of blue light Per cent
Heated control	4.6	8.1	6.35	.....	.....	.....	...	7.85	86.1
A-1	..	..	...	—100	—60.9	.....	308	3.91	75.8
A-2	..	..	...	—99.9	—47.8	.....	284	4.01	83.4
A-3	..	..	...	—100	—57.5	.....	296	3.99	86.4
Average	2.8	5.4	4.10	—100	—55.5	—35.4	296	3.97	81.9
B-1	..	..	...	**—99.3**	**—24.3**	.....	164	4.04	83.4
B-2	..	..	...	—98.8	—30.4	.....	160	4.19	84.6
B-3	..	..	...	—98.8	—31.7	.....	152	4.15	85.2
Average	3.7	6.8	5.25	—99.0	—28.9	—17.3	159	4.13	84.4
C-1	..	..	...	—92.0	—19.4	.....	88	4.15	85.5
C-2	..	..	...	—87.5	—7.9	.....	84	4.25	84.5
C-3	..	..	...	—82.6	+.5	.....	84	4.24	86.6
Average	4.4	8.2	6.30	—87.4	—9.0	—.8	85	4.21	85.5
D-1	..	..	...	—58.8	—1.8	.....	56	4.36	86.4
D-2	..	..	...	—43.7	—.3	.....	56	4.58	86.7
D-3	..	..	...	—45.0	—.3	.....	60	4.64	89.4
Average	4.3	8.3	6.30	—49.2	—.8	—.8	57	4.53	87.5
E-1	..	..	...	—22.2	—5.9	.....	40	4.72	83.4
E-2	..	..	...	—26.3	—2.8	.....	40	4.91	84.6
E-3	..	..	...	—33.2	—2.8	.....	48	4.87	85.7
Average	4.5	8.2	6.35	—27.2	—3.8	0	43	4.83	84.6

treated with hydrochloric acid, were calculated as parts of SO_3 per 100,000 parts of paper.

To determine the hydrogen-ion concentration, 2½ grams of the ground sample was transferred to a 250 cc pyrex glass Erlenmeyer flask, and 125 cc of boiling distilled water having a pH of 7 was added. The flask was tightly stoppered and allowed to cool. The solution was then decanted off, and its pH value was determined. The electrometric method, with the quinhydrone electrode, was used for all treated samples, and the colormetric method, with isohydric indicators adjusted in steps of 0.2 pH, was used for the untreated controls.

Total acidity and pH determination on all subsamples were made in duplicate on different days.

Each treating solution was applied to three different sheets or subsamples at different times in the manner described. In other words, the work was repeated twice. The subsamples having the suffix 1 are considered as set 1. (Tables II, III and IV.) Set 2, which is represented by subsamples having the suffix 2, was not started until the heating, physical testing, and acidity determinations of set 1 were completed. Set 3, represented by subsamples having the suffix 3, was not started until set 2 was completed. This procedure of repeating the work was adopted because it was thought that the average of the triplicate sets would be more nearly correct than if each treatment were run in triplicate at the same time.

Results

The effect of heating the untreated control samples of paper for 72 hours at 100 deg. C., as shown in tests on

TABLE III—EFFECT OF SULPHURIC ACID ON PHYSICAL PROPERTIES AND COLOR OF WATERLEAF ALL-RAG BOND PAPER HEATED FOR 72 HOURS AT 100 DEG. C

Subsample No.	Strength of H_2SO_4 Grams per liter	Folding endurance after heating: Transverse direction Double folds	Longitudinal direction Double folds	Average both directions Double folds	Bursting strength after heating Points	Tensile strength after heating: Transverse direction Kg	Longitudinal direction Kg	Average both directions Kg
Heated control		650	2,111	1,381	39.1	4.6	8.1	6.35
F-1	0.4904	0	0	0	10.5	..	..	...
F-2	0.4904	0	0	0	8.8	..	..	...
F-3	0.4904	0	0	0	8.0	..	..	...
Average	.4904	0	0	0	9.1	1.6	2.1	1.85
G-1	.2452	8	13	11	25.2	..	..	...
G-2	.2452	21	31	26	31.0	..	..	...
G-3	.2452	1	1	1	25.0	..	..	...
Average	.2452	10	15	13	27.1	3.3	7.0	5.15
H-1	.1226	348	984	666	39.2	..	..	...
H-2	.1226	272	667	470	39.0	..	..	...
H-3	.1226	198	664	431	41.0	..	..	...
Average	.1226	273	772	523	39.7	4.3	8.2	6.25
I-1	.0613	465	1,548	1,007	39.4	..	..	...
I-2	.0613	524	1,589	1,057	39.0	..	..	...
I-3	.0613	366	1,295	831	40.0	..	..	...
Average	.0613	452	1,477	965	39.5	4.4	8.2	6.30
J-1	.0306	501	1,848	1,175	38.6	..	..	...
J-2	.0306	487	1,655	1,071	39.6	..	..	...
J-3	.0306	499	1,709	1,104	40.7	..	..	...
Average	.0306	496	1,737	1,117	39.6	4.3	8.2	6.25

TABLE III—EFFECT OF SULPHURIC ACID ON PHYSICAL PROPERTIES AND COLOR OF WATERLEAF ALL-RAG BOND PAPER HEATED FOR 72 HOURS AT 100 DEG. C.—Continued

Subsample No.	Variation from strength of heated controls: Folding endurance Per cent	Bursting strength Per cent	Tensile strength Per cent	Acidity of unheated paper: Total calculated as parts SO_3 per 100,000 parts paper	pH of water extract	Reflection of blue light Per cent
Heated control	.....	.....	.....	...	7.85	86.1
F-1	—100.0	—73.1	.....	104	3.65	72.2
F-2	—100.0	—77.5	.....	74	3.95	60.6
F-3	—100.0	—79.5	.....	84	3.76	67.2
Average	—100.0	—76.7	—70.9	87	3.79	66.7
G-1	—99.2	—35.5	.....	69	4.11	78.7
G-2	—98.1	—20.7	.....	52	4.28	83.0
G-3	—99.9	—36.1	.....	60	4.16	84.0
Average	—99.1	—30.7	—18.9	60	4.18	81.9
H-1	—51.8	+.3	.....	52	4.44	82.8
H-2	—66.0	—.3	.....	48	4.52	86.7
H-3	—68.8	+4.9	.....	40	4.41	84.0
Average	—62.1	+1.5	—1.6	47	4.46	84.5
I-1	—27.1	+.8	.....	44	4.99	85.3
I-2	—23.5	—.3	.....	36	4.75	83.0
I-3	—39.8	+2.3	.....	32	4.64	87.5
Average	—30.1	+1.0	—.8	37	4.79	85.3
J-1	—14.9	—1.3	.....	25	5.10	85.6
J-2	—22.4	+1.3	.....	28	4.98	84.2
J-3	—20.1	+4.1	.....	28	5.16	84.2
Average	—19.1	+1.3	—1.6	27	5.08	84.7

TABLE IV—EFFECT OF HYDROCHLORIC ACID ON PHYSICAL PROPERTIES AND COLOR OF WATERLEAF ALL-RAG BOND PAPER HEATED FOR 72 HOURS AT 100 DEG. C.

Subsample No.	Strength of HCl Grams per liter	Folding endurance after heating: Transverse direction Double folds	Folding endurance after heating: Longitudinal direction Double folds	Folding endurance after heating: Average both directions Double folds	Bursting strength after heating Points	Tensile strength after heating: Transverse direction Kg	Tensile strength after heating: Longitudinal direction Kg	Tensile strength after heating: Average both directions Kg
Heated control		650	2,111	1,381	39.1	4.6	8.1	6.35
K-1	0.1823	0	0	0	14.3	..	..	...
K-2		0	0	0	15.0	..	..	...
K-3		0	0	0	16.2	..	..	...
Average	.1823	0	0	0	15.2	2.6	5.1	3.85
L-1	.0912	3	4	4	21.1	..	..	...
L-2		5	7	6	30.0	..	..	...
L-3		1	2	2	22.0	..	..	...
Average	.0912	3	4	4	24.4	3.5	6.5	5.00
M-1	.0456	298	740	519	36.3	..	..	...
M-2		242	816	529	37.0	..	..	...
M-3		325	854	590	41.0	..	..	...
Average	.0456	288	803	546	38.1	4.2	8.2	6.20
N-1	.0228	490	1,678	1,084	38.3	..	..	...
N-2		427	1,491	959	39.0	..	..	...
N-3		505	1,855	1,186	39.0	..	..	...
Average	.0228	474	1,675	1,075	38.8	4.3	8.3	6.30

TABLE IV—EFFECT OF HYDROCHLORIC ACID ON PHYSICAL PROPERTIES AND COLOR OF WATERLEAF ALL-RAG BOND PAPER HEATED FOR 72 HOURS AT 100 DEG. C.—Continued

Subsample No.	Variation from strength of heated controls: Folding endurance Per cent	Variation from strength of heated controls: Bursting strength Per cent	Variation from strength of heated controls: Tensile strength Per cent	Acidity of unheated paper: Total calculated as— Parts HCl per 100,000 parts paper	Acidity of unheated paper: Total calculated as— Parts SO_3 per 100,000 parts paper	pH of water extract	Reflection of blue light Per cent
Heated control						7.85	86.1
K-1	—100.0	—63.4	.....	47	52	4.24	81.0
K-2	—100.0	—61.6	.....	51	56	4.39	78.6
K-3	—100.0	—58.6	.....	33	36	4.45	85.2
Average	—100.0	—61.1	—39.4	44	48	4.36	81.6
L-1	—99.7	—46.0	.....	36	39	4.37	83.1
L-2	—99.6	—23.3	.....	40	44	4.44	85.7
L-3	—99.9	—43.7	.....	44	48	4.47	83.6
Average	—99.7	—37.6	—21.3	40	44	4.43	84.1
M-1	—62.4	—7.2	.....	36	39	4.66	85.5
M-2	—61.7	—5.4	.....	35	38	4.68	83.1
M-3	—57.3	+4.9	.....	31	34	4.68	85.8
Average	—60.5	—2.6	—2.4	34	37	4.67	84.8
N-1	—21.5	—2.0	.....	29	32	4.86	87.0
N-2	—30.6	—.3	.....	33	36	4.92	83.7
N-3	—14.6	—.3	.....	26	29	5.04	87.3
Average	—22.2	—.8	—.8	29	32	4.94	86.0

folding endurance, bursting strength, tensile strength, and reflection of light, is recorded in Table 1. Six untreated sheets were used. Each was heated and tested separately. The effect of chemically pure aluminum sulphate and sulphuric and hydrochloric acids on folding endurance, bursting strength, tensile strength, and color of the paper artifically aged by heating for 72 hours at 100 degrees are recorded in Tables II, III, and IV. The results of the triplicate sets are given separately in these tables to show the variation obtained under the same conditions of treating, heating, and testing. The effect of these chemicals on the physical properties is also expressed as percentage variation from the average strength of untreated and heated controls.

The total acidity figures are given as parts of SO_3 per 100,000 parts of paper, the pH figures are values obtained on the water extract of the paper, and the percentage reflection of light is a measurement of the change in color of the sample.

Fig. 1 shows the effect of the chemicals used on folding endurance of the paper heated for 72 hours at 100 deg. C. Figs. 2 and 3 show the effect of the same chemicals on the bursting strength and tensile strength. Only the average results of the triplicate sets are shown in the graphs.

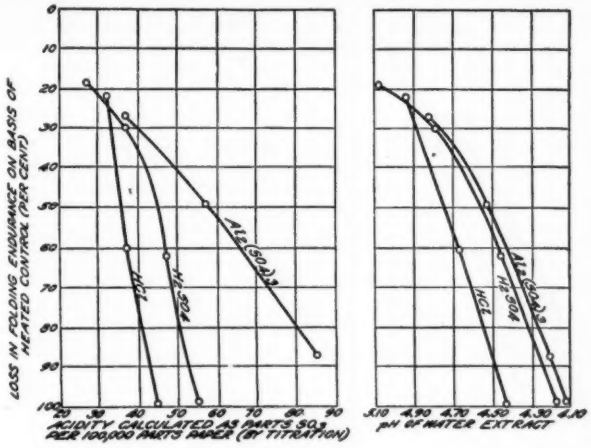

LOSS IN FOLDING ENDURANCE ON BASIS OF HEATED CONTROL (PER CENT)
HCL
H2SO4
Al2(SO4)3
ACIDITY CALCULATED AS PARTS SO3 PER 100,000 PARTS PAPER (BY TITRATION)
pH OF WATER EXTRACT

FIG. 1

Effect of $Al_2(SO_4)_3$, H_2SO_4, and HCl on folding endurance of waterleaf paper heated for 72 hours at 100 deg. C.

Discussion of Results

As the results obtained on the three sets of samples treated at different times with the same solution are in fairly good agreement with respect to the effect on the folding endurance, bursting strength, and tensile strength, only the average of the three sets given in the tables and graphs are considered in this discussion.

Where the pH of the water extract of the paper treated with aluminum sulphate, sulphuric acid, or hydrochloric acid is plotted against the percentage decrease in folding endurance (Fig. 1) the curves show that the papers which were treated with aluminum sulphate and sulphuric acid

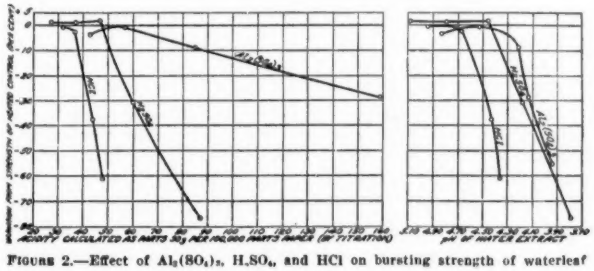


FIGURE 2.—Effect of $Al_2(SO_4)_3$, H_2SO_4, and HCl on bursting strength of waterleaf

FIG. 2

Effect of $Al_2(SO_4)_3$, H_2SO_4, and HCl on bursting strength of waterleaf paper heated for 72 hours at 100 deg. C.

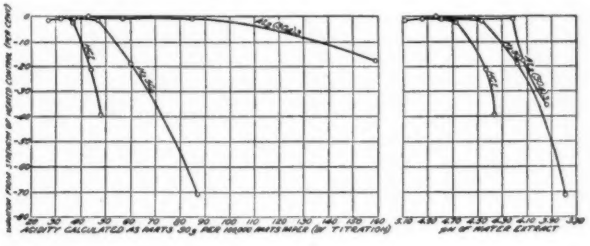


FIG. 3

Effect of $Al_2(SO_4)_3$ H_2SO_4, and HCl on tensile strength of waterleaf paper heated for 72 hours at 100 deg. C.

and which yielded water extracts of the same pH value suffered essentially the same deterioration, whereas those treated with hydrochloric acid were subject to decidedly greater deterioration for the same pH of the water extract when the pH of the extract was below 4.80.

Where the total acidity values are plotted against the percentage loss in folding endurance, bursting strength, and tensile strength (Figs. 1, 2, and 3), the curves show that hydrochloric acid causes a greater deterioration than does sulphuric acid, whereas the total titratable acidity of aluminum sulphate, as was to be expected, is not nearly so harmful to the paper as is the equivalent quantity of free sulphuric acid.

UNTREATED CONTROL

Table I shows that the pH of the water extract of the six sheets of untreated paper ranged from 7.60 to 8 and averaged 7.85.

The untreated control sheets showed practically no change in folding endurance, bursting strength, or tensile strength after being artificially aged by heating from 72 to 336 hours at 100 deg. C.

The average folding endurance of the unheated controls was 1,434 double folds, the average tensile strength was 6.15 kg, and the average bursting strength was 37.1 points. After the paper was heated at 100 deg. C. for 72 hours the average folding endurance, tensile strength, and bursting strength were 1,381 double folds, 6.35 kg, and 39.1 points. Paper heated for 336 hours had a folding endurance of 1,338 double folds, a tensile strength of 6.25 kg, and a bursting strength of 40.5 points.

Heating for 72 hours caused no perceptible change in the color of the untreated paper. The percentage of light reflected by the unheated controls ranged from 83 to 88.2, averaging 85.6, and the heated controls ranged from 84.2 to 89.1, averaging 86.1, which is practically the same as for the unheated controls.

Table I also shows the variation in folding endurance and bursting strength that may be expected between the various sheets of paper used in the experiments. The average folding endurance of the unheated controls ranged from 1,300 double folds on subsample 4 to 1,565 double folds on subsample 6, and the bursting strength ranged from 35 points on subsample 6 to 39 points on subsample 5. The variation between the heated portions of the same sheets was about the same as that of the unheated portion. The average folding endurance of the heated controls ranged from 1,151 double folds on subsample 4-1 to 1,501 on subsample 6-1, and the bursting strength ranged from 38 points on subsample 4-1 to 41.2 on subsample 6-1.

EFFECT OF ALUMINUM SULPHATE

The results of the tests with aluminum sulphate are shown in Table II.

4 G Per Liter.

The average pH value of the water extract from the subsamples treated with a 0.4 per cent solution of $Al_2(SO_4)_3 \cdot 18H_2O$ was 3.97, and the total titratable acidity was 296. On artificial aging by heating for 72 hours at 100 deg. C. the folding endurance decreased 100 per cent, the bursting strength decreased 56 per cent, and the tensile strength decreased 35 per cent. The percentage reflection of light of the heated portion was 81.9. This subsample was slightly darker than the untreated and heated controls.

2 G Per Liter.

The pH of the water extract from the paper was 4.13; the total titratable acidity was 159. The folding endurance decreased 99 per cent, the bursting strength decreased 29 per cent, and the tensile strength decreased 17 per cent. The percentage reflection of light of the heated portion was 84.4. This subsample was not visibly darker than the controls.

1 G Per Liter.

The pH of the water extract from the paper was 4.21, and the titratable total acidity, 85. The heated subsamples decreased 87 per cent in folding endurance, and 9 per cent in bursting strength. The tensile strength remained practically the same as that of the untreated and heated controls. The percentage reflection of light was 85.5, or practically the same as that of the controls.

0.4 G Per Liter.

The pH of the water extract from the paper was 4.53, and the total titratable acidity was 57. The folding endurance decreased 49 per cent, but the bursting strength, tensile strength, and reflection of light remained practically the same as those of the controls.

0.2 G Per Liter.

The pH of the water extract from the paper was 4.83, and the total titratable acidity was 43. The folding endurance decreased 27 per cent; the bursting strength decreased 4 per cent, which was well within the experimental error; and the tensile strength remained the same as that of the controls. The percentage reflection of light was 84.6.

EFFECT OF SULPHURIC ACID

Table III shows the results of the tests with sulphuric acid.

0.4904 G Per Liter (0.01 N.).

The average pH of the water extract from the subsamples treated with sulphuric acid was 3.79, and the total titratable acidity was 87. The folding endurance decreased 100 per cent, the bursting strength decreased 77 per cent, and the tensile strength decreased 71 per cent when the paper was heated for 72 hours at 100 deg. C. The percentage reflection of light of the heated portion was 66.7. This portion was considerably darker than the untreated and heated controls.

0.2452 G Per Liter (0.005 N.).

The pH of the water extract from the paper was 4.18, and the total titratable acidity was 60. The folding endurance decreased 99 per cent, the bursting strength decreased 31 per cent, and the tensile strength decreased 19 per cent upon heating for 72 hours at 100 deg. C. The percentage reflection of light of the heated portion was 81.9. This subsample was slightly darker than the controls.

0.1226 G Per Liter (0.0025 N.).

The pH of the water extract from the paper was 4.46, and the total titratable acidity was 47. The decrease in folding endurance was 62 per cent, but the bursting strength, tensile strength, and reflection of light remained practically the same as those of the controls.

0.0613 G Per Liter (0.00125 N.).

The pH of the water extract from the paper was 4.79, and the total titratable acidity was 37. The folding endurance decreased 30 per cent, but the bursting strength, tensile strength, and reflection of light remained practically the same as those of the controls.

0.0306 G Per Liter (0.000625 N.).

The pH of the water extract from the paper was 5.08, and the total titratable acidity was 27. The decrease in folding endurance was 19 per cent, but the bursting strength, tensile strength, and reflection of light remained about the same as those of the controls.

EFFECT OF HYDROCHLORIC ACID

The results of the tests with hydrochloride acid are given in Table IV.

0.1823 G Per Liter (0.005 N.).

The average pH value of the water extract from the

subsamples treated with this solution was 4.36, and the total titratable acidity was 48. The folding endurance decreased 100 per cent, the bursting strength decreased 61 per cent, and the tensile strength decreased 39 per cent upon artificial aging by heating for 72 hours at 100 deg. C. The percentage reflection of light of the heated portion was 81.6. This subsample was slightly darker than the untreated and heated controls.

0.0912 G Per Liter (0.0025 N.).

The pH of the water extract from the paper was 4.43, and the the total titratable acidity was 44. The folding endurance decreased 100 per cent, the bursting strength decreased 38 per cent, and the tensile strength decreased 21 per cent. The heated paper showed no visible discoloration, the reflection of light being 84.1 per cent.

0.0456 G Per Liter (0.00125 N.).

The pH of the water extract from the paper was 4.67, and the total titratable acidity was 37. The folding endurance decreased 61 per cent. The bursting strength, tensile strength, and reflection of light remained practically the same as those of the controls.

0.0228 G Per Liter (0.000625 N.).

The pH of the water extracts from the paper was 4.94, and the total titratable acidity was 32. The decrease in folding endurance was 22 per cent, and the bursting strength, tensile strength, and reflection of light remained practically the same as those of the controls.

Conclusions and Summary

Experiments were conducted to show the effect of small quantities of aluminum sulphate and sulphuric and hydrochloric acids on the folding endurance, bursting strength, tensile strength, and color of waterleaf all-rag bond paper artificially aged by heating for 72 hours at 100 deg. C.

The folding endurance, bursting strength, tensile strength, and color of the untreated paper heated for 72 hours at 100 deg. C. remained essentially the same as those for the unheated paper. The differences that occurred in these experiments are within the limits of error of the method of test.

Small quantities of aluminum sulphate, sulphuric acid, or hydrochloric acid in paper caused its rapid deterioration. The deterioration increased as the quantities of these chemicals were increased. Hydrochloric acid caused greater and more rapid deterioration than did sulphuric acid or aluminum sulphate when the pH values of the water extract or the total titratable acidity were the same.

When the pH of the water extract from the paper treated with these chemicals was 5.10, the loss in folding endurance on heating was less than 20 per cent. By extrapolation it appears that the loss at a pH of 5.50 would be approximately 10 per cent.

When the total titratable acidity of the paper was less than 20 (calculated as parts SO_3 per 100,000 parts paper), the loss in folding endurance of the heated paper was less than 20 per cent.

When the pH of the water extract from the paper treated with aluminum sulphate, sulphuric acid, or hydrochloric acid was greater than 4.20, 4.40, and 4.60, respectively, the loss in bursting strength on heating was less than 10 per cent.

When the total titratable acidity of the paper treated with aluminum sulphate, sulphuric acid, or hydrochloric acid was less than 85, 50, and 38, respectively, the loss in bursting strength of the heated paper was less than 10 per cent.

When the pH of the water extract from the paper treated with aluminum sulphate, sulphuric acid, or hydrochloric acid was greater than 4.20, 4.30, and 4.55, respectively, the loss in tensile strength of the treated paper was less than 10 per cent.

When the total titratable acidity of the paper treated with aluminum sulphate, sulphuric acid, or hydrochloric acid was less than 135, 55, and 40, respectively (calculated as parts SO_3 per 100,000 parts paper), the loss in tensile strength of the heated paper was less than 10 per cent.

The folding endurance, bursting strength, and tensile strength rapidly and progressively decreased as the pH value of the water extracts of the treated samples decreased from the figures given in the preceding paragraphs, and as the total titratable acidity increased from the figures given above.

The folding endurance of the paper was decidedly more affected by acidity, whether expressed as pH of the water extract or as total titratable acidity, than was the bursting strength or the tensile strength.

Of the three tests employed, folding endurance yielded the most significant results as to the effect of mineral acids on this paper. It appears to be the only one of the three necessary to make in studying the deterioration of paper by acids.

An observable discoloration of this paper occurred on heating (1) when it contained sufficient aluminum sulphate to give a water extract having a pH of about 3.95, (2) when it contained sufficient sulphuric acid to give a water extract having a pH of about 4.15, or (3) when it contained sufficient hydrochloric acid to give a water extract having a pH of about 4.35. The paper containing these chemicals and having a pH somewhat higher than these figures showed no visible discoloration, whereas the paper having a pH value somewhat less than these figures showed a pronounced discoloration.

Although no relation has been established between the deterioration of paper under the experimental and actual service conditions, it seems reasonable to assume that in general such a relation exists. Acids and acid salts, even in the small proportions used in these experiments, exert a slow deteriorating effect on paper, which may not be observable for many years.

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TAPPI Section, Page 163

Pulp and Paper Industry Literature Review

Abstracts of Articles and Patents Compiled by the Abstracts and Bibliography Committee of the Technical Association of the Pulp and Paper Industry, A. Papineau-Couture, John F. Ohlson, C. E. Peterson and Clarence J. West, Chairman

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Power House

Water for Steam and Heat Technology. E. Barke, Wochbl. Papierfabr. 63, No. 11: 204-206, (March 12, 1932).—The author discusses the known causes for the formation of boiler scale and the means for prevention. Several of the known methods are given. Water with 1 degree of hardness (German) is equivalent to 10 milligrams of calcium oxide.—J. F. O.

Boiler Feed Water Containing Oxygen. A. St. Klein. Zellstoff Papier 12, No. 2: 69-70, (Feb., 1932). The most important papers on the destructive effect of oxygen in the boiler feed water are reviewed and the means and device for its removal are given as well as references to numerous patents on the subject.—J. F. O.

Modern Water Purification Apparatus for the Pulp and Paper Industry. Papier-Fabr. 29, No. 48: 853, (Nov. 29, 1931).—Description of a patented water filter and purifier, "Kommandit Gesellschaft Kary", consisting of a cone-shaped tank filled with pure quartz.—J. F. O.

Recent Methods for Boiler Cleaning. Papier-Fabr. 29, No. 51/52: 915, (Dec. 22, 1931).—Description of some of the new ways of turbining a boiler.—J. F. O.

Improvements in the Utilization of Combustible Materials, that is, in the Production of Steam. Weiss. Zellstoff Papier, 12, No. 4: 153-159, (April, 1932).—The author begins by discussing the coal which is most economical for each type boiler; then the combustion chamber, brick work, grates, super-heater and pre-heater, fire regulation and the water treatment.—J. F. O.

Re-using Lubricating Oils. Zellstoff Papier 12, No. 5: 197, (May, 1932).—Description of a new system for oil fiiltering using fuller earth or floridin which not only removes the mechanical impurities but also the aging products formed in the oil by oxidation or other processes.—J. F. O.

Regulation of Air for Mechanical Step Grate, especially the Mechanical Pot Grate. Papier-Fabr. 30, No. 10: 114, (March 6, 1932).—J. F. O.

The Materials of Construction for High Capacity Boilers of the Last Decade. G. Kruger. Papier-Fabr. 28, No. 49: 791, (Dec. 6, 1931).—The progress in boiler construction with pressure up to 120 atmospheres and 500 deg. C. super heat has made it imperative that the materials used in the construction must pass certain rigid and high specifications. Harder materials are used for the tubes since the soft carbon steels have not the same resistance. For the super-heater, molybdenum and chromium alloy steels whose resistance is four times as much as the ordinary carbon steels. The properties and the method of construction of several of the other important parts of a boiler are explained.—J. F. O.

Concerning Mechanical Zone Grates. Pradel. Papier-Fabr. 29, No. 49: 786-791, (Dec. 6, 1931).—Mechanical stokers with regulated zones for the admission of air makes possible a more even combustion and a higher capacity. Thorough discussion of this type stoker with several illustrations.—J. F. O.

Piston Machine for Bleeding Steam from 0 to 100 per cent in Paper Mills. Von Hutter. Wochbl. Papier-Fabr. 63, No. 1: 8-10, (Jan. 2, 1932).—A comparison is presented between the advantages in heat economy of a newly constructed piston machine for bleeding steam from 0 to 100 per cent and the present machines. This machine embodies the simplest means for changing the amount of bleeder steam required for one or more back pressures. In regard to heat economics, it combines the highest efficiency with the best thermal operation. Bleeding pressure of 0.25 to 3 atmospheres can be effected according to the intake pressure without in any way influencing the quantity of bleeder steam to the machine.—J. F. O.

Utilization of the Heat and the Elasticity of Recent Boiler Installations and their Influence in the Choice of Boilers and Feeders. Papier-Fabr. 30, No. 3: 30, (Jan. 17, 1932).—It is shown that by the use of the continuous cooking process the choice of boiler and feeder is considerably simplified over the intermittent cooking process used up till now. The Ruth Steam Accumulator is discussed.—J. F. O.

Economic and Technical Viewpoints in Planning a Power System for the Pulp and Paper Industry. Gerking. Papier-Fabr. 30, No. 2: 17-20, (Jan. 10, 1932). —In opposition to the paper given by Hoffer, appearing in No. 26, 1931 issue of this periodical. Proof is given to show that the harmful influence of continuous drive on the steam consumption with Ljungstrom turbine is not less. as Hoffer states, but higher than with a normal axial turbine.—J. F. O.

Sonnek-Neverly Controller. Papier-Fabr. 30, No. 2: 25-26, (Jan. 10, 1932).—Description of a recorder which records the speed of the machine, breaks and time down.—J. F. O.

A new Method for Protection Against Rust. A. Foulon. Wochbl. Papier-Fabr. 63, No. 2: 30-31, (Jan. 9, 1932).—Because of the relatively high cost for treating iron and steel with chromium, nickel, etc. for the prevention of rust, a new method has been developed by I. G. Farbenindustrie A. G. called "Altrament". It consists of treating the iron and steel with salts of phosporic acid of a definite composition which react with the iron and form a water insoluble layer which is protection against rust. The physical properties of the iron and steel, such as hardness, elasticity, etc., are not changed, neither are the dimensions. The objects to be treated must be free of

fats, rust and oxides after which they are dipped in baths of the salts.—J. F. O.

What Does a Kilowatt Hour Cost with a Bleeder-Condensation Outlay? G. A. Matthaei. Wochbl. Papier-Fabr. 62, No. 51: 1193-1196, (Dec. 19, 1931).—By means of numerous curves and equations of higher mathematics, the author shows how one can calculate whether it is more economical to buy power or to generate it themselves. An exceedingly scientific article.—J. F. O.

The Economy of the Piston Steam Engine. Ferd. Mall, Zwickauer Maschinenfabrik. Wochbl. Papier-Fabr. 63, No. 5: 85-86, (Jan. 30, 1932).—The author states the high useful effect of the piston steam engine by using the exhaust steam. Over 90 per cent of the steam is put to useful work, at 15 atmospheres and 284 deg. C. superheat.—J. F. O.

The Ljungstrom Back Pressure Steam Turbine. Metz. Wochbl. Papier-Fabr. 63, No. 7: 125-128, (Feb. 13, 1932).—The character of steam turbines are briefly discussed, and then the Ljungström turbine is thoroughly described, including its application. Several illustrations accompany the article.—J. F. O.

Method and Apparatus for Supplying Power in Connection with Paper Manufacture. Henri G. Chatain assignor to Hammermill Paper Co. U. S. pat. 1,851,751, (March 29, 1932).—The supply of steam to a steam engine is regulated so that all the exhaust is used in the driers of the paper machine and supplies the full requirements thereof. The engine drives a d.c. generator which supplies the power to drive the paper machine, and the excess power generated in the steam engine drives an a.c. generator for delivering the current thus generated to a power line.—A. P.-C.

Machinery

Saturator. Albert E. F. Moone assignor to Orenda Corp. U. S. pat. 1,845,317, (Feb. 16, 1932).—The invention provides an improved gate-roll guide-frame for felt saturating tanks, which is independent of the side walls of the tank, so that the frame is practically unaffected by any warping or buckling of the walls.—A. P.-C.

Saturating Method and Apparatus. Carl J. Pater assignor to The Philip Carey Manufacturing Co. U. S. pat. 1,842,111, (Jan. 19, 1932).—The felt to be saturated is preheated and passed around a wire-covered rotating suction drum partially immersed in a bath of hot saturant. The saturant is thus forced through the felt by vacuum, and the excess saturant passing through the felt is returned to the bath by the suction pump.—A. P.-C.

Fourdrinier Paper Machine. Thomas H. Broadhurst assignor to Charles Walmsley and Co. (Canada), Ltd. U. S. pat. 1,851,941, (March 29, 1932).—The side frames of the table are connected by transverse rail-forming members which, when the table is in operative position, rest on a number of main supporting rollers carried by stationary posts. In order to move out the table, some of the main supporting rollers are rotated by power and propel the table sideways into the aisle; during shifting of the table the leading end of some of the rail-forming members are brought into engagement with supplementary supporting rollers arranged in the aisle on stationary posts. Suitable arms are hinged to the back side of the table frame; they are swung at right angles to the frame when moving the table out of or into operative position, and are folded flat against the table frame when the latter is in operative position or when stringing a new wire into position.—A. P.-C.

Suction Box for Paper Machines. William H. Grosse. U. S. pat. 1,842,020, (Jan. 19, 1932).—Along each longitudinal edge of the suction box is mounted a roll extending across the full width of the wire. A tight joint is made with the roll by means of a sheet of rubber attached to the side of the box and pressed into contact with the surface of the roll by means of a board. The space between the rolls at each end of the box is closed by means of a suitably shaped sheet of rubber held between two correspondingly shaped pieces of sheet metal, the whole assembly (one rubber and two metal sheets) being mounted so that their position is adjustable transversely of the wire.—A. P.-C.

Device for Preventing Breaks from Extending Fully Across Paper Machines. George S. Witham, St. U. S. pat. 1,838,603, (Dec. 29, 1931).—A normally inactive nozzle is located above the wire near the couch roll and approximately midway between the edges. When a break forms on either side of the web, the nozzle is automatically brought into action to emit a fluid jet impinging upon and cutting the web, and at the same time the nozzle is moved transversely across the wire towards the side having the tear, so as to form a diagonal slit and a resultant lead strip or tail end.—A. P.-C.

Continuous Machine for Making Paper, Artificial Leather, and the Like. Cristofar Carcano. U. S. pat. 1,839,784, (Jan. 5, 1932).—The invention consists essentially in forming the table of the machine with suction chambers containing rolls on which a covering plane is made to slide. This covering plane is built up of perforated plates, hinge-connected to one another and forming an endless chain driven by polygonal drums. On the perforated plates travels the wire carrying the pulp sheet, so that the latter is subjected to a continuous suction without the wire being subjected to friction or excessive wear.—A. P.-C.

Wire Vibrator. Earl E. Berry assignor to Beloit Iron Works. U. S. pat. 1,841,702, (Jan. 19, 1932).—One or more boards are placed on edge across the width of the wire, near the breast roll, close to or in the place of one or more table rolls. Each board is provided with one or more electric vibrators acting in a vertical plane, which impart rapid impulses of small amplitude (a few thousandths of an inch), which in turn are transmitted to the wire.—A. P.-C.

Fourdrinier Wire Shaker. George H. Kendall, Everett W. Clem, Gustaf A. Peterson and John W. Vedder assignors to Rice Barton and Fales, Inc. U. S. pat. 1,844,580, (Feb. 9, 1932).—A substantially vertically reciprocating part is tied to a positive immovable center about which it is adapted to swing slightly, and transmits a horizontal vibration to the table of the machine. Means are provided to adjust the amplitude of the vibration of the wire while the machine is running, by loosening certain parts which are afterwards tightened, so that, after tightening, there is no chance for a knock to develop in the transmitting mechanism.—A. P.-C.

Paper Press. Nicholas J. Niks. U. S. pat. 1,844,294, (Feb. 9, 1932).—Along each edge of the felt near the press a suction box is provided to dry the portion of the felt that is not covered by the sheet of paper.—A. P.-C.

Paper Machine Press. Harry L. Brooks and Thomas O'Flynn assignors to The Black-Clawson Co. U. S. pat. 1,847,377, (March 1, 1932).—In order to decrease slippage between the felt and lower press roll, the felt wraps the roll around a considerable portion of its circumference (preferably about 230 deg).—A. P.-C.

Felt Conditioner. Eugene H. Lansing. U. S. pat. 1,846,646, (Feb. 23, 1932).—In order to ensure the necessary intimate contact between the lower surface of the felt being cleaned and the surface of the suction box of the

conditioner, the latter is provided with a pressure contactor in the form of an endless piece of heavy textile material. The contactor overlies the felt and moves in response to the movement of the felt throughout the area subjected to the action of the suction box of the conditioner; and it also moves transversely of the felt in unison with the suction box.—A. P.-C.

Apparatus for Drying Fibrous Material. Elton R. Darling assignor to Cornstalk Products Co., Inc. U. S. pat. 1,846,474, (Feb. 23, 1932).—In order to dry a sheet of high-alpha pulp made from cornstalks without its becoming hard, the sheet is carried by an endless porous belt which is partly immersed in a suitable volatile liquid (preferably ethanol). The belt passes over a heating element above which is a suitable ventilating device. The volatilized liquid passes from the conveyor belt through the paper and entrains the water in the paper. The liquid is recovered by known methods.—A. P.-C.

Method and Means of Controlling Webs in Slitters and Winders. James A. Cameron assignor to Cameron Machine Co. U. S. pat. 1,838,612, (Dec. 29, 1931).—In order to aid in controlling the speed of the web and in maintaining it constant, one or more "stabilizing rolls," which are preferably located at a point near the slitters, are positively driven at a desired speed; and the web is trained around a considerable portion of the periphery of these rolls.—A. P.-C.

Winder Motor Drive Control System. Stephen A. Staege assignor to Westinghouse Electric and Manufacturing Co. U. S. pat. 1,838,966, (Dec. 29, 1931).—In a surface winder each winding drum is driven by a separate d.c., compound wound motor having a drooping characteristic speed-torque curve. The calender stack is driven by an a.c. motor which also drives a compound-wound generator which supplies power to the drum motors. A booster generator supplies full-load current to the drum motors when at rest and before the calender motor is started, the connections being arranged so that the drum motors start at the same time as the calender motor and are accelerated at the same rate as the latter.—A. P.-C.

Delivery Mechanism for Paper Rolls in Paper Making Machines. Charles W. Valentine and Alfred F. Helin assignors to The Bagley & Sewall Co. U. S. pat. 1,851,605, (March 29, 1932).—The invention provides a receiver located at one side of the winder mechanism, in combination with a pushing device which acts to push the finished roll from the winder into the receiver, the latter being then operated to deliver the roll in any desired manner. The pusher and receiver are preferably operated by electric motors.—A. P.-C.

Paper Winding Mechanism. Charles W. Valentine and Alfred F. Helin assignors to The Bagley & Sewall Co. U. S. pat. 1,844,081, (Feb. 9, 1932).—The invention provides mechanism for rapidly changing the spindle of a reel or winder, without loss of paper. The spindles are journalled in bearings mounted on parallel beams supported on pivoted levers to permit the reel to move away from the winding drum as the roll builds up. A second spindle is journalled on the beams, close to but not contacting with the drum, so that when the first roll is finished the second spindle can be immediately brought into contact with the drum to start winding another roll.—A. P.-C.

Paper Machinery. Harrison R. Williams. U. S. pat. 1,842,889, (Jan. 26, 1932).—The invention relates to the manufacture of soft, absorbent pads and bandages from thin tissue webs, and has for its principal object to provide mechanism which will be suitable for building up the thin tissue into multiple-ply webs at high speeds. It provides duplicate winders arranged in parallel and adapted to act alternately to take the tissue web from a single source of supply and to deliver the resultant multiple-ply webs alternately to a single slitting and reeling mechanism. The winders are in the form of endless belts running upon suitable driving drums or rollers; they are of small height and can be placed one above the other for delivering to common slitting and reeling mechanisms.—A. P.-C.

Drive for Paper Machines. Bernard A. Malkin. U. S. pat. 1,840,590, (Jan. 12, 1932).—In order to permit of speeding up machines equipped with mechanical drives, the latter is supplemented by an electric motor drive for each section, each motor having suitable characteristics to control the machine speed. The sectional motors receive their power from a source which controls the machine speed and the line shaft or main drive is controlled from the same source. There is no automatic individual control on the motors to cause them to run at uniform speed under varying power conditions, as the mechanical drive functions as the controlling medium. Manual control of the sectional motors may be applied so that the proportion of load taken by them may be varied.—A. P.-C.

Synchronizing Device for Electric Sectional Paper Machine Drives. Walter Vogel assignor to Aktiengesellschaft der Maschinenfabriken Escher Wyss & Cie. U. S. pat. 1,846,770, (Feb. 23, 1932).—The speed regulating mechanism is constructed so that its sensitiveness varies with the speed of operation of the machine. Provision is made to adjust the sensitiveness of the regulating mechanism so that it can be made approximately constant for any operating speed.—A. P.-C.

Pulp Distributor for Fourdrinier Machines. Nathan H. Bergstrom. U. S. pat. 1,847,426, (March 1, 1932).—A number of flexible distributing boards are placed above and close to the wire and extend from the breast roll in the general direction of travel of the wire. The boards are adjustable both vertically and sideways at several points along their lengths.—A. P.-C.

Roll Suction Device. Max Wenzel. U. S. pat. 1,842,924, (Jan. 26, 1932).—The suction box is constructed so that the wire is supported on rolls as it passes over the box, to have rolling instead of sliding contact. Inside the box is a trough for collecting the water and evacuating it separately from the air; the trough is constructed and supported in such a manner that it collects all the water that drips along the sides of the box, and substantially the same pressure prevails above and below the trough.—A. P.-C.

Method of Making Layers of Distended Fibrous Materials. Frank L. Bryant assignor to Cellufoam Corp. U. S. pat. 1,841,785, (Jan. 19, 1932).—Fibrous material is thoroughly impregnated with bubble-forming ingredients and distended, while in semi-liquid form, and subjected to agitation by means of blades designed to give the mass a swift vertical movement having a centrifugal component and a downwardly directed component. Agitation is continued until the mass assumes a creamy consistency and becomes distended to two or three times its original volume. It is discharged on to a fourdrinier wire in a layer 1 to 1.5 inches thick; it is immediately and momentarily subjected to a vacuum of about 5 inches to form a "skin layer" on the under surface, and is then subjected to a lighter suction (about 3 inches of vacuum) to remove as much water as possible without compacting the material. It is finally dried in a long drying chamber where it is not subjected to pressure; if desired, while in the drying chamber it may be brought into surface contact with thin sheets of absorptive material.—A. P.-C.

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

Newark, N. J.—The Progressive Paper Box Company, 341-55 Jeliff avenue, manufacturer of paper boxes and containers, has increased production schedule and is now running on close to full capacity basis, giving employment to about 175 persons in different departments. It is expected to continue on this schedule for a number of months to come.

Clifton, N. J.—Frank Desiderio Sons, Inc., 262 Jefferson street, Newark, N. J., paper dealers, and waste paper goods business, has concluded arrangements for the purchase of plant, equipment and other assets of the Clifton Paper Mills, Inc., 1 Ackerman avenue, Clifton, manufacturer of paper boxes and containers. The property was secured from William G. Fox, who has acted as receiver for the Clifton company since last January, on a bid of $285,000 at a public sale. The purchasing company will take over the property at once, reorganize the paper box interest and continue production at the mill. The waste paper business will be continued, as heretofore, with storage and distributing warehouses in Newark and Whippany, N. J. Anthony, Dominick and Thomas Desiderio will head the Clifton Mills organization.

Westfield, Mass.—Crane & Co., Inc., Westfield, are arranging to transfer the manufacture of their special Japanese linen paper stock from Westfield to Dalton, Mass., where this production unit will occupy the Pioneer mill of the company. The change will be made in October, and manufacture discontinued entirely at the Westfield plant.

Toledo, Ohio—The American Paper Bottle Company, recently organized by local interests, is planning the establishment of a new plant for the manufacture of cellulose bottles suitable for milk containers, to be marketed in competition with glass bottles at considerably reduced price. It is expected to have the new plant ready for service at an early date. It is reported to cost over $30,000, with equipment.

Green Bay, Wis.—The Straubel Paper Company, 625 Willow street, has work under way on a new one-story and basement storage and distributing plant, 50 x 60 feet. The erection is being handled by day labor.

Detroit, Mich.—Otten Brother Company has been organized with a capital of $50,000, to manufacture cardboard products of various kinds. The company will take over and expand organization of same name at 7356 Richmond avenue. Elmer G. Otten is one of the principal incorporators and will head the new company.

Kingsport, Tenn.—The Tennessee-Eastman Corporation, affiliated with the Eastman Kodak Company, Kodak park, Rochester, N. Y., has adopted a full time production schedule at its local cellulose rayon mill, operating three eight-hour shifts per day. It is proposed to continue this basis for an indefinite period.

Orange, N. J.—The Triple S Products, Inc., care of Harry Amsterdam, 319 Main street, Orange, representative, recently organized with capital of 1000 shares of stock, no par value, plans operation of plant in this section for the manufacture of a line of paper products.

Adrian, Mich.—The Simplex Paper Corporation has advanced production schedules at local mill and at branch plant at Palmyra, Mich. The plants are now giving employment to about 160 workers in different departments. Frederick P. Wood is president.

Amite, La.—Recent reference in these columns to the Gulf States Crate Company, Amet, should have indicated latter place in Louisiana and not Alabama, as item improperly stated through typographical error. As previously stated, this company, recently organized, is perfecting plans for the construction of a new mill for the manufacture of fiber cups and kindred products, estimated to cost close to $60,000, with machinery. The new company is headed by H. S. Weigle, Sr., identified with the Amite Bank & Trust Company, Amite, La.

Vancouver, B. C.—The Pacific Mills, Ltd., Standard Bank Building, manufacturer of paper boxes and other paper goods, has plans under way for the construction of a new two-story addition, to be equipped for the manufacture of solid fiber containers and allied products. It is estimated to cost over $70,000, with machinery. A list of equipment to be installed is being arranged and purchases will soon be made. W. G. Swan, Birks Building, Vancouver, is architect.

Hamilton, Ont.—E. Pullan, Ltd., 162 Ferguson avenue North, operating a waste paper business, is said to be arranging for the immediate rebuilding of storage and distributing plant at Cannon street and Ferguson avenue, recently damaged by fire. Work is reported to cost about $30,000.

Chagrin Falls, Ohio—The Adams Bag Company, Cleveland and Mill streets, manufacturer of manila and other heavy paper bags and containers, has awarded a general contract to the H. K. Ferguson Company, Hanna Building, Cleveland, Ohio, for a new one-story addition to plant, 61 x 140 feet, to be used primarily for storage and distributing service. Installation will include two cranes and other handling equipment. General contractor has also engaged an architect and engineer for new unit. Estimated cost about $35,000, including equipment.

Jersey City, N. J.—The Fibrone Corporation, recently organized to manufacture a line of fiber products, has leased space in building at 50-52 Essex street, totaling about 12,000 square feet of floor space, and will occupy

at once for new plant. Company has also taken option on approximately same amount of space in an adjoining building at 145 Morris street, and proposes to use for expansion at a later date.

New York, N. Y.—The Union Bag and Paper Corporation, Woolworth Building, has increased production schedule at its different mills and is now running at several plants on both day and night schedules, with larger working quotas. Company is also carrying out an expansion program, including installation of additional equipment at main plant, primarily for the production of cellophane bag stocks, including printing facilities.

Chicago, Ill.—The Horvitz Paper Box Company, Inc., has been organized by Charles Horvitz and associates, with capital of $10,000, to take over and operate company of same name, with plant at 913 West Roosevelt Boulevard, manufacturer of paper boxes and containers.

Philadelphia, Pa.—G. A. Bossler, 248 North Delaware street, paper and paper products, has leased the four-story building at 306 New street, and will occupy for a new storage and distributing plant. It is proposed to take possession at once. Present plant will be removed to new location and increased operations carried out.

Port Huron, Mich.—According to a survey made by the Port Huron Chamber of Commerce, local paper mills of the Port Huron Sulphite and Paper Company and the Dunn Sulphite Paper Company are running at about 80 per cent of capacity, giving employment to large working forces.

Brooklyn, N. Y.—The Apex Paper Converting Company, 334 Stanton street, New York, has leased space in the Robert Gair Building, 70 Washington street, Brooklyn, and will occupy for expansion.

Asten Felts Made in U. S.

The Asten-Hill Manufacturing Company, Scotts Lane (East Falls), Philadelphia, Pa., was formed for the purpose of taking over the manufacture, sale and better identification of the Asten Asbestos Drier Felts which had formerly been developed and sold by the H. N. Hill company, also of that city.

These felts were originally developed and patented by v. Asten & Co., of Eupen, Belgium, and have been imported by H. N. Hill & Co. for a number of years, during which time the sales have increased and the product was proven and developed to meet the conditions encountered on American machines.

The manufacture of Asten Asbestos Drier felts was started in Philadelphia in an experimental manner about a year ago—in order to establish if it was possible to make the felts in the United States at a reasonable price, in view of the high cost of labor.

These experiments have progressed in a satisfactory manner. It was found that the duty could be saved and economies effected if the felt could be put on a production basis, so it was decided to enlarge the plant to take care of the American business. Based on a production program which the management feels is possible at certain prices it has been decided to very materially reduce the price of Asten Asbestos Drier Felts with the idea that this price will develop sufficient business to enable them to maintain that price.

The Asten Asbestos Drier Felt is a multiple fabric with an upper surface woven of asbestos which protects it from the heat of the dryers, and a backing of tightly woven cotton yarn. They are woven in a very complicated way which prevents any tendency to stretch or lengthen on the machine, and at the same time making a very open fabric with good porosity so the steam vapors readily pass through the felt.

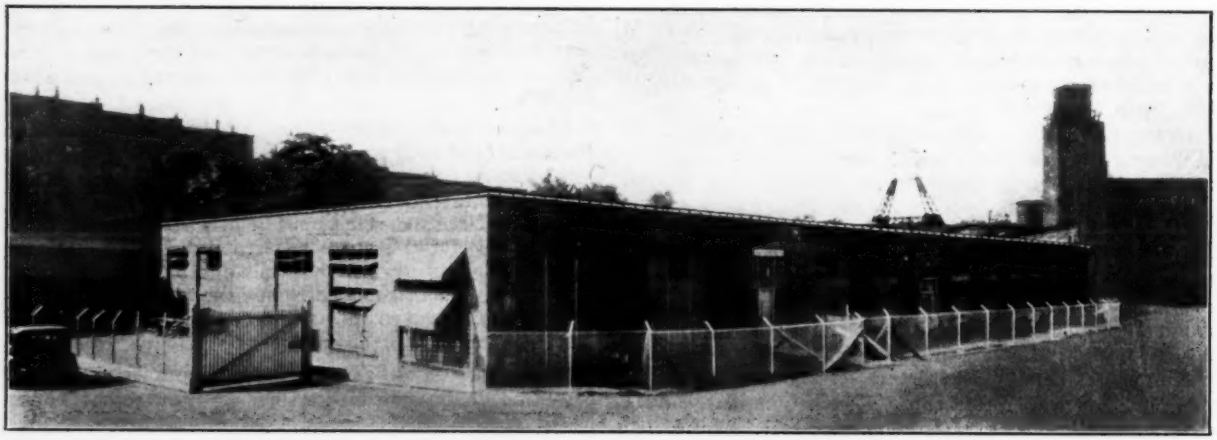
In many cases surprisingly long life has been obtained from Asten Asbestos Drier Felts. Also it has been found due to the soft, smooth, porous, absorbent nature of the felts they dry the paper more uniformly and satisfactorily.

Asten felts are pre-shrunk and stretched before shipping so that they will not shrink or narrow on the machine. Due to this fact Asten felts are often supplied woven in the form of an endless belt, or equipped with the patented clipper seam which is joined by simply inserting a wire through the clipper hooks and makes practically an endless joint on the side that comes next to the paper.

Scandinavian Ground Wood Cartel

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., October 5, 1932—Commercial Attache Lund, at Oslo, reports to the Department of Commerce that an attempt is now being made to revive the Scandinavian ground wood cartel or if this is not possible to establish some sort of cooperation between Scandinavian producers through having a uniform curtailment of production, so that there will be a more even balance between suppy and demand. The initiative is being taken by a group of Swedish producers, who control not only a large part of the mechanical ground wood production in that country but are strong financially. Since the dissolution of the ground wood cartel last April prices have declined considerably, in fact, to such an extent that sales are being made at a loss even under the most favorable manufacturing conditions.



PLANT OF ASTEN-HILL MFG. CO., PHILADELPHIA, PA.

BIG KRAFT MILLS CONSOLIDATION PROPOSED

(Continued from page 15)

and C. H. Worcester, Chicago. Officers elected are: President, Ben Alexander; vice presidents, D. C. Everest, W. H. Mason, James P. Gillies; secretary, A. P. Woodson; treasurer, M. P. McCullough.

Forest Products Laboratory Transfer

Moving of the equipment of the United States Forest Products Laboratory into a new building costing approximately $900,000 at Madison, Wis., has been completed. About 250 truck loads of equipment were transferred from the old building to the new structure located on the campus of the University of Wisconsin. About a month was required for the transfer.. The staff of 180 employees is engaged in installing and adjusting the equipment so the experiments and research may go on. The laboratory was established in 1910 in connection with the University of Wisconsin, and has been of distinct value to the paper industry in developing processes for the use of new varieties of wood in pulp making, and in bringing out the rod mill for use in pulp production.

The new quarters are attractive in outside architecture, and represent the most modern facilities possible for scientific study and research. Miniature pulp and paper mills have been established so the practical application of processes is possible. Ample space is provided for future expansion.

Kieckhefer Plants More Active

Orders received during the first twenty days of September, 1932, in the thirteen factories of the Kieckhefer Container Company, with head offices at Milwaukee, Wis., showed an increase of 18.6 per cent over the same period of 1931, according to John Kieckhefer, president. The first twenty days of September, 1931, compared with the first twenty days of August, 1931, showed a decline in sales of 13 per cent. The first twenty days of September this year showed an increase of 38.9 per cent as compared with the first twenty days of August, 1931. Unfilled orders on hand and inquiries indicate that October will show a further substantial increase over September, Mr. Kieckhefer believes. Firming in prices in the past and advances expected in the near future are also regarded as hopeful indications.

"Our business," says Mr. Kieckhefer, "with factories supplying all portions of the United States and Honolulu, has always been an excellent barometer of business conditions for the reason that every box we make is packed with some commodity promptly after it is received."

New Government Locks Planned

New government locks at Rapid Croche, on the lower Fox River near Kaukauna, Wis., an important water power point, will be started as soon as navigation closes. The project will cost approximately $180,000. A period of about three years will be required for the work, so as not to obstruct navigation.

Wisconsin Products Week Successful

Products of Wisconsin paper mills received more publicity last week than they have had for many a day, as a feature of "Wisconsin Products Week," sponsored by the Wisconsin State Chamber of Commerce. Every city carried out a plan of using down town store windows to display products made in various plants. In the paper mill cities, products of the mills, converting plants and allied concerns were placed on public inspection, giving the public a panoramic summary of what is actually produced by the paper industry of Wisconsin. Benefits were especially marked for consumer products such as tissues and other household articles.

The effect of the week will be a stimulation of loyalty to Wisconsin products and manufacturers, and will help to stimulate a better feeling towards industry, especially in the matter of taxation.

Definite Taxation Policy Advocated

A definite, sensible taxation policy for Wisconsin is advocated by J. M. Conway, general manager of the Hoberg Paper and Fibre Company, Green Bay, Wis., who as president of the Wisconsin Taxpayers Alliance delivered an address last week at a meeting at Green Bay, of the Wisconsin State Chamber of Commerce. He also favors a halt in the unnecessary extension of governmental activities by the state. He favors consolidation of political sub-divisions, elimination of many bureaus and commissions, and a new policy with regard to education, highway construction and maintenance and other functions of local government.

John H. Barchard, president of Hummel & Downing Company, Milwaukee box manufacturers, and president of the state chamber, was also present at the meeting.

Public Utilities Assessments Increased

Assessments of public utilities in Wisconsin will be increased $14,100,315 for 1932, according to figures made public by the Wisconsin Tax Commission. The total assessments will be $374,188,850, an increase of 3.92 per cent. Taxes will amount to $7,607,907.42, an increase of $230,934.20 over last year. The total taxes show an increase of 3.13 per cent, although the rate has been lowered from $20.49 per $1,000 of assessed valuation to $20.33 this year.

Air Planes to Fight Forest Fires

Use of air planes in detecting and fighting forest fires is to be inaugurated in the federal forest preserves in Wisconsin, according to E. W. Tinker, regional forester. Nine landing fields are being laid out in strategic places. The planes will be equipped with pontoons so they can be landed on the numerous lakes in the wooded regions. This system will make it possible to have crews of thirty or forty men at the scene of a fire within a few hours and will cut down to a minimum the present serious losses because of fires.

Mr. Tinker is advocating an emergency appropriation of $150,000 for the employment of 1,500 to 2,000 men in national forests this winter to plant trees, lay out fire lanes and remove fallen timber. The forestry department is furnishing 2,500,000 trees to be set out in Wisconsin this fall.

After making a survey, Mr. Tinker finds that the government could plant 100,000 acres of forest lands a year in Wisconsin, Minnesota and Michigan during the next ten years at a cost of $5 an acre, and receive an 8 to 9 per cent return on its money. There are 1,020,000 acres in national forests of the lake states that require planting, and about 450,000 acres are in urgent need of it. The total annual expense would be about $840,000. Returns in forty years would be about $3,300,000 from the sale of selective timber. If no planting were done, the returns at that time would be about $900,000. About three thousand men would be employed each season.

News of the Industry

Two men were burned about the arms and legs when a pile of lime dust at the sulphate mill of the Thilmany Pulp and Paper Company, Kaukauna, Wis., caved over on

them. Anton Boots and his son, Henry Boots, were undermining the pile with the use of a hose, and the hot lime surrounded them when the top of the pile caved over. Both will be confined to the hospital for ten days.

Upon completing fifty years of employment with the Kimberly-Clark Corporation at its mill at Appleton, Wis., Joseph Lausman was presented with a watch. The gift was presented by F. J. Sensenbrenner, president of the company. Mr. Lausman started with the company when eleven years old. He was a machine tender for many years, and became a printer when a wall paper plant was established.

The marriage is announced of George A. Whiting, son of Frank B. Whiting, of Neenah, Wis., president of the George A. Whiting Paper Company and vice-president of the Whiting-Plover Paper Company, and Miss Julia E. Bentzen, daughter of Dr. and Mrs. Theobald Bentzen, Stevens Point, Wis. The wedding occurred last week at Stevens Point. Mr. Whiting is a chemist at the Whiting-Plover mill at Stevens Point.

Chicago Paper Association Meets

The Chicago Paper Association held its regular bimonthly session at the Bismarck Hotel on September 27, utilizing the meeting to complete plans for local cooperation in the National Paper Trade Association meetings of next week. The members who are also on the Survey Committee of the coarse paper group will be at the Hotel Stevens at 9:30 a.m. Monday morning to open the first business session of the entire program. Jules Wolbrette, of the Southern Paper Mills, will be in charge of this initial meeting. The Chicago Paper Association will also maintain headquarters in Suite 1025 A during the National Paper Trade Association meetings. At the Tuesday evening meeting James S. Danehy, secretary of the association, and chairman of the Bag Committee of the Coarse Paper Division of the National Paper Trade Association read a draft of a letter of recommendations which he will present to the Bag Committee next week. The letter is likely to meet with the hearty approval of all bona fide paper jobbers inasmuch as Mr. Danehy will recommend that all classes of merchandise made of paper, such as towels, bags, toilet paper, etc., be sold through the regular paper jobbing channels rather than indiscriminately whenever and wherever an outlet can be found.

TAPPI Notes

C. M. Connor, formerly with the Electro Bleaching Gas Company, is now chemical engineer with the Glassine Paper Company at W. Conshohocken, Pa.

C. J. Nordenswan, formerly in charge of wood pulp development for the Hercules Powder Company, is now with the Lahti Pulp Company, Ltd., Lahti, Finland.

H. J. Skinner, of Skinner & Sherman, Inc., 246 Stuart Street, Boston, Mass., has announced that reprints of his address on "Cellulose in Industry," given at the New Orleans meeting of the A. C. S. are available on request.

"An Atlas of Paper Making Fibers," is the title of a well prepared and interesting bulletin recently issued by the New York State College of Forestry. Copies at fifty cents per copy are available through the Extension Department of the College.

In the article entitled, "The Relation of Sheet Properties and Fiber Properties in Paper, IV, by R. H. Doughty which was published in the PAPER TRADE JOURNAL of September 8, the captions of Fig. 2 on page 33 and Fig. 4 on page 34 were transposed. The captions, however, as they appeared were correct.

Obituary

William Nagle

William Nagle, secretary and director of Thomas J. Nagle, Inc., paper and twine merchants, of Hollis, Queens, died September 28 at his home at 51-48 193d street, Hollis, after a week's illness. He was eighty-four years old.

Mr. Nagle, who had lived in Hollis forty-one years, was active in civic work there before Queens was annexed to New York in 1898. As a member of the Hollis Board of Education, he led the movement for the first modern school building and free public library there. He also organized and became first president of the Columbia Hose Company of the volunteer fire department of Hollis. He and his family were among the first to attend St. Gabriel's Protestant Episcopal Church there. Mrs. Nagle died last December, three months after the couple had celebrated their sixtieth wedding anniversary.

Surviving are four sons, William L., Thomas J., George A., and Robert A. Nagle, all of Hollis, and two daughters, Mrs. Arthur W. Brooks, wife of the Rev. Mr. Brooks, pastor of Christ Church-by-the-Sea, at Broad Channel, and Mrs. E. W. Davis, of St. Louis.

George F. Russell

LAWRENCE, Mass., September 30, 1932.—George Fred Russell, president and treasurer of the Champion-International Paper Company, died at his home here last night of a heart attack. He was sixty-seven years old at the time of his death.

Mr. Russell, who was born in Lawrence, was also chairman of the board of the Merchants Trust Company and a director of the Selden Worsted Mill. He attended Phillips Academy, Andover, and was graduated from the Massachusetts Institute of Technology in 1889. The Russell Paper Company, which in 1902 merged with the Champion Card and Paper Company, of Pepperell, Mass., was founded by his father in 1842.

Mr. Russell was a member of the Union, Algonquin, Commercial and Exchange Clubs, all of Boston. His wife, the former Josephine G. Dearborn, of Manchester, N. H., survives.

John C. Cunningham

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., October 4, 1932.—John C. Cunningham, of Chesterfield, Mass., paper mill representative for B. F. Perkins & Son, Inc., of this city, died last week at the Cooley-Dickinson Hospital in Northampton after a short illness. He was born in Lawrence and up until last November had lived many years in this city. He was a Mason and a Shriner and a member of Technical Association of the Paper Industry.

Dean Baker Establishes Freshman Camp

[FROM OUR REGULAR CORRESPONDENT]

CRANBERRY LAKE, N. Y., October 1, 1932.—A freshman camp is to be established here this year by the State College of Forestry before the starting of studies at Syracuse University. Plans have been under consideration by Dean Baker and other faculty members for making arrangements for more thorough instruction of freshmen entering college. A number of freshmen began their first forestry experience this week with a light program and it is probable that within the next few years activities will be extended.

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING OCTOBER 1, 1932

CIGARETTE PAPER

Standard Products Corp., De Grasse, Havre, 25 cs.; Champagne Paper Corp., De Grasse, Havre, 9 cs.; De Manduit Paper Corp., De Grasse, Havre, 228 cs.; Max Spiegel & Son, Pr. Hayes, Genoa, 46 bls.; American Tobacco Co., Ile de France, Havre, 300 cs.; Standard Products Corp., Ile de France, Havre, 34 cs.; American Tobacco Co., Manhattan, Havre, 100 cs.

WALL PAPER

——, Manhattan, Hamburg, 5 cs.; J. E. Bernard & Co., Manhattan, Hamburg, 1 bl.; Irving Trust Co., A. Ballin, Hamburg, 11 cs.

PAINTED PAPER

N. McClelland, De Grasse, Havre, 1 cs.

NEWS PRINT

Jay Madden Corp., Gen. von Steuben, Bremen, 132 rolls; Jay Madden Corp., Scanmail, Kotka, 273 rolls; ——, Scanmail, Kotka, 426 rolls; Int'l Paper Co., P. T. Dodge, Dalhousie, 3310 rolls; Baldwin Paper Co., A. Ballin, Hamburg, 121 rolls; Perkins Goodwin & Co., A. Ballin, Hamburg, 255 rolls; Walker Goulard Plehn Co., Gripsholm, Gothenburg, 42 bls.

PRINTING PAPER

E. Dietzgen & Co., Black Hawk, Rotterdam, 40 cs.; Hensel Bruckman & Lorbacher, Milwaukee, Hamburg, 2 cs.; ——, Manhattan, Hamburg, 5 cs.; Martin & Bechtold, A. Ballin, Hamburg, 10 cs.

WRAPPING PAPER

Standard Products Corp., Minnetonka, Antwerp, 6 cs.; H. Reeve Angel & Co. Inc., Minnetonka, Antwerp, 3 cs.; Yardley & Co., American Merchant, London, 10 cs.; Borden Riley Paper Co., Veendam, Rotterdam, 6 cs.

FILTER PULP

Indep. Forwarding Co., Manhattan, Hamburg, 20 cs.

FILTER PAPER

H. Reeve Angel & Co. Inc., American Merchant, London, 4 cs.; C. Schleicher & Schull Co. Inc., Manhattan, Hamburg, 3 bls.

DECALCOMANIA PAPER

American Express Co., Milwaukee, Hamburg, 2 cs.; American Express Co., Bremen, Bremen, 8 cs.

TRANSFER PAPER

Rohner Gehrig & Co., Bremen, Bremen, 2 cs.; Fuchs & Lang Manfg. Co., Glasgow Maru, Hamburg, 9 cs.

BARYTA COATED PAPER

Globe Shipping Co., Gen. von Steuben, Bremen, 21 cs.

METAL COATED PAPER

Globe Shipping Co., Bremen, Bremen, 33 cs.

COATED PAPER

Rohner Gehrig & Co., A. Ballin, Hamburg, 1 cs.; ——, A. Ballin, Hamburg, 6 cs.; Happel & McAvoy, A. Ballin, Hamburg, 33 cs.; Happel & McAvoy, Milwaukee, Hamburg, 1 cs.; Happel & McAvoy, Manhattan, Hamburg, 4 bdls.

PHOTO PAPER

American Photo-Supply Co., American Merchant, London, 6 cs.

COLORED PAPER

Beckhard Simfred Co., Bremen, Bremen, 1 cs.; S. Gilbert, Bremen, Bremen, 2 cs.; W. Bersch, Bremen, Bremen, 3 cs.; Phoenix Shipping Co., Bremen, Bremen, 2 cs.; F. Murray Hill Co., Manhattan, Hamburg, 4 cs.

TISSUE PAPER

F. C. Strype, Laconia, Liverpool, 2 cs.; W. J. Byrnes, Mauretania, Southampton, 4 cs.

WRITING PAPER

Thomas & Pierson, De Grasse, Havre, 1 cs.; Indep. Forwarding Co., Ile de France, Havre, 4 cs.

ENVELOPES

Beckhard Simfred Co., Bremen, Bremen, 11 cs.; Beckhard Simfred Co., A. Ballin, Hamburg, 3 cs.

GUMMED PAPER

Martanco Stamp Co., Baltic, Liverpool, 4 cs.

WAFER PAPER

Ipex, Black Hawk, Rotterdam, 4 cs.; Ipex, Veendam, Rotterdam, 4 cs.

PAPER BAGS

J. B. Mast & Co., Minnetonka, Antwerp, 8 cs.

CARD BOARD

Houbigant, Inc., De Grasse, Havre, 2 cs.; Chermay, Inc., De Grasse, Havre, 6 cs.; Coty Processing Co., De Grasse, Havre, 15 cs.; American Express Co., Manhattan, Hamburg, 100 cs.

PASTE BOARD

——, Gen. von Steuben, Bremen, 65 cs.

MISCELLANEOUS PAPER

L. A. Consmiller, Gen. von Steuben, Bremen, 6 cs.; C. L. Voorhees, Pr. McKinley, Yokohama, 8 cs.; C. Steiner, Veendam, Rotterdam, 11 bls.; Keller Dorian Paper Co., Ile de France, Havre, 4 cs.; Irving Trust Co., Kwansi Maru, Osaka, 15 cs.; The Borregaard Co. Inc., Gripsholm, Gothenburg, 660 rolls; Corn Exchange Bank Trust Co., Venice Maru, Kobe, 13 cs.

RAGS, BAGGINGS, ETC.

T. Jaffe, Morro Castle, Havana, 38 bls. rags; E. J. Keller Co. Inc., Gourko, ——, 826 bls. flax waste; 22 bls. rags; H. Schimmell, Gourko, Antwerp, 181 bls. cotton waste; Van Oppen & Co., Gourko, Antwerp, 53 bls. rags; E. J. Keller Co. Inc., Exhibitor, ——, 68 bls. flax waste; ——, Exhibitor, Genoa, 95 bls. rags; E. J. Keller Co. Inc., Exarch, ——, 34 bls. rags; 1st Natl. Bank of Boston, Scan-

mail, Gdynia, 56 bls. rags; Amtorg Trading Corp., Scanmail, Leningrad, 583 bls. rags; 170 bls. waste; Castle & Overton, Inc., Amer. Legion, B. Ayres, 210 bls. hessian scrap; M. Snedeker Corp., Hoxie, Belfast, 166 bls. paper stock; 26 bls. paper stock; O. Siegel, Morro Castle, Havana, 300 bls. rags.

OLD ROPE

Banco Coml. Italiane Trust Co., Gen. von Steuben, Bremen, 59 coils; E. J. Keller Co. Inc., Black Hawk, ——, 74 coils; ——, Gourko, Newcastle, 17 coils.

CHINA CLAY

E. Fougera & Co., American Merchant, London, 25 bls.

WOOD PULP

Parsons & Whittemore Inc., Gen. von Steuben, Bremen, 300 bls. wood pulp; Castle & Overton, Inc., Black Hawk, Rotterdam, 125 bls. wood pulp, 25 tons; A. Giese & Son, Black Hawk, Rotterdam, 40 bls. wood pulp; Castle & Overton, Inc., Gourko, Rotterdam, 1483 bls. wood pulp, 296 tons; Castle & Overton, Inc., Milwaukee, Hamburg, 275 bls. wood pulp, 55 tons; Bankers Trust Co., Milwaukee, Hamburg, 508 bls. wood pulp, 101 tons; ——, Simon von Utrecht, Sundsvall, 513 bls. mechanical pulp, 85 tons; Johaneson Wales & Sparre, Inc., Simon von Utrecht, Sundsvall, 1625 bls. sulphite, 314 tons; 1200 bls. mechanical, 203 tons; 180 bls. sulphate, 30 tons; Mead Sales Co. Inc., Simon von Utrecht, Sundsvall, 250 bls. sulphite, 50 tons; Johaneson Wales & Sparre, Inc., Simon von Utrecht, Obbola, 1050 bls. sulphate, 150 tons; ——, Simon von Utrecht, Hernosand, 720 bls. sulphite, 120 tons; Bulkley Dunton & Co., Simon von Utrecht, ——, 2500 bls. wood pulp, 500 tons; Lagerloef Trading Co., Scanmail, Helsingfors, 378 bls. sulphite, 76 tons; ——, Scanmail, Wiborg, 2830 bls. sulphite, 511 tons; E. Hansson, Scanmail, Gdynia, 368 bls. cellulose, 56 tons; Castle & Overton, Inc., A. Ballin, Hamburg, 680 bls. wood pulp, 136 tons; Castle & Overton, Inc., Glasgow Maru, Hamburg, 162 bls. wood pulp, 25 tons; Bulkley Dunton & Co., Gripsholm, ——, 125 bls. wood pulp; Chase National Bank, Gripsholm, Gothenburg, 200 bls. sulphite; Perkins Goodwin & Co., Gripsholm, Gothenburg, 254 bls. sulphite; 153 bls. sulphate.

PULPWOOD

G. S. Kerr Co. Ltd., (Fulton, N. Y.) Kem, South Nelson, N. B., 1125 cords.

WOOD FLOUR

State Chemical Co., Black Hawk, Rotterdam, 400 bags, 20000 kilos; Corn Exchange Bank & Trust Co., Veendam, Rotterdam, 632 bags.

PORTLAND IMPORTS

WEEK ENDING OCTOBER 1, 1932

Johaneson Wales & Sparre, Inc., Simon von Utrecht, Sundsvall, 900 bls. sulphite, 152 tons; Bulkley Dunton & Co., Simon von Utrecht, ——, 1000 bls. wood pulp, 200 tons.

BOSTON IMPORTS

WEEK ENDING OCTOBER 1, 1932

American Express Co., Black Hawk, Antwerp, 200 rolls wrapping paper; National Shawmut Bank, Laconia, Liverpool, 9 bls. rags; G. F. Malcolm Inc., Laconia, Liverpool, 2 cs. tissue paper; Atkinson Haserick & Co., Pr. Hayes, Genoa, 3 cs. paper; Johaneson Wales & Sparre, Inc., Simon von Utrecht, Sundsvall, 1150 bls. sulphite, 212 tons; Perkins Goodwin & Co., Simon von Utrecht, Sundsvall, 3000 bls. sulphate, 508 tons; Parsons & Whittemore, Inc., Simon von Utrecht, Sundsvall, 124 rolls news print; Bulkley Dunton & Co., Simon von Utrecht, ——, 1000 bls. sulphite, 200 tons; Chase National Bank, Simon von Utrecht, Obbola, 4550 bls. sulphate, 650 tons; ——, Simon von Utrecht, Hernosand, 2400 bls. sulphite, 400 tons; E. J. Keller Co. Inc., Artigas, ——, 69 bls. bagging.

PHILADELPHIA IMPORTS

WEEK ENDING OCTOBER 1, 1932

E.Butterworth & Co. Inc., Exarch, Genoa, 225 bls. glue stock; Chase National Bank, Kwansi Maru, Kobe, 50 bls. rags; ——, Kwansi Maru, Kobe, 75 bls. rags; Phila. National Bank, Kwansi Maru, Kobe, 25 bls. rags; Banco Coml. Italiane Trust Co., Kwansi Maru, Osaka, 75 bls. rags; Lagerloef Trading Co., Scanmail, Kotka, 260 bls. mechanical pulp, 52 tons; ——, Scanmail, Kotka, 75 rolls news print; Paper House of Penna., Scanmail, Kotka, 40 rolls news print; ——, Scanmail, Wiborg, 4160 bls. sulphite, 694 tons; Irving Trust Co., Scanmail, Wiborg, 175 bls. sulphate, 29 tons; Johaneson Wales & Sparre Inc., Scanmail, Gdynia, 333 bls. cellulose, 50 tons; Miami Valley Importing Co., Scanmail, Gdynia, 3323 bls. cellulose, 510 tons; Belgam Corp., Atago Maru, Kobe, 165 bls. wipers; J. Rosenberg, Atago Maru, Kobe, 50 bls. rags; American Over-Ocean Corp., Venice Maru, Kobe, 50 bls. rags; H. W. T. Mali, Venice Maru, Kobe, 50 bls. rags; E. J. Keller Co. Inc., Executive, ——, 42 bls. rags.

SAVANNAH IMPORTS

WEEK ENDING OCTOBER 1, 1932

1st Natl. Bank of Boston, Kwansi Maru, Shaghai, 500 bls. tares.

NEWPORT NEWS IMPORTS

WEEK ENDING OCTOBER 1, 1932

——, Simon von Utrecht, Hernosand, 360 bls. sulphite, 60 tons; 1800 bls. sulphate, 300 tons.

BALTIMORE IMPORTS

WEEK ENDING OCTOBER 1, 1932

Mead Sales Co. Inc., Simon von Utrecht, Sundsvall, 4296 bls. sulphite, 727 tons; Johaneson Wales & Sparre, Inc., Simon von Utrecht, Sundsvall, 3415 bls. sulphite, 645 tons; 1300 bls. chemical, 264 tons; Parsons & Whittemore, Inc., Simon von Utrecht, Sundsvall, 686 bls. mechanical, 115 tons; Bulkley Dunton & Co., Simon von Utrecht, ——, 4000 bls. wood pulp, 811 tons; J. Andersen & Co., Simon von Utrecht, Soderhamn, 1000 bls. sulphate, 200 tons; Parsons & Whittemore, Inc., Leuna, ——, 250 bls. sulphite; Parsons & Whittemore, Inc., Whiteway, ——, 5956 bls. mechanical pulp.

TAPPI To Meet at Seattle

The fall meeting of the Pacific Coast Section of the Technical Association of the Pulp and Paper Industry will be held at Seattle, Wash., Friday and Saturday, October 21 and 22. Technical papers will be presented Friday morning and there will be an open discussion of these papers Friday afternoon. A business meeting will be held Saturday morning and the whole section will attend the Washington-University of California footbal game Saturday afternoon. A banquet is scheduled to be held Saturday evening.

S. F. Shattuck Honored

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., October 3, 1932.—S. F. Shattuck treasurer of the Kimberly-Clark Corporation, Neenah, Wis., has been elected commodore of the Neenah Nodaway Yacht club. He succeeds J. C. Kimberly, president of the Neenah Paper Company, commodore for the past year. Other officers chosen were John R. Kimberly, vice commodore, and Lyle Stilp, secretary and treasurer. Both Mr. Kimberly and Mr. Stilp are executives of the Kimberly-Clark Corporation.

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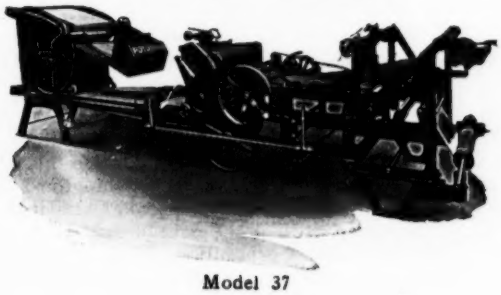

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New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, October 5, 1932

During the past week, trading in the local paper market was more active than of late. Demand for the various standard grades of paper is increasing and sales forces of the leading paper organizations anticipate satisfactory business during the closing months of the year, at least.

The news print paper market is showing signs of improvement. Production is being maintained in sufficient volume to take care of current requirements. The volume of advertising in the local newspapers is increasing materially. Unfortunately, the price situation remains unsatisfactory.

Demand for the various grades of paper board is fairly persistent. The recent advanced prices are holding up well. Sentiment in the fine paper market is also more buoyant. Tissues are moving at a steady pace. The coarse paper market is also displaying a stronger undertone.

Mechanical Pulp

Steadiness prevails in the ground wood market. Demand for both domestic and imported mechanical pulp is moderately active. Offerings are not excessive and the industry is in a sound statistical position. Prices are generally holding to previously quoted levels.

Chemical Pulp

Trading in the chemical pulp market is becoming more lively. Contract shipments are going forward in fairly heavy volume. Prices are steady. Imported bleached sulphite is still quoted at from $2.00 to $2.90, on dock, Atlantic ports. Domestic and Canadian bleached sulphite is offered at from $1.75 to $3.75, f.o.b. pulp mill.

Old Rope and Bagging

The old rope market is rather quiet at present. Demand for both domestic and imported old manila rope is light. Small mixed rope is moving slowly. Old rope prices are practically unchanged. The bagging market is marking time. Scrap bagging is in moderate request. Gunny bagging is fairly steady.

Rags

Paper mill interest in the domestic rag market is more noticeable than of late. New cotton rags are in better demand. No. 1 white shirt cuttings, in particular, are displaying greater strength. Roofing grades are firm, with offerings limited. Little change is reported in the imported rag market.

Waste Paper

The lower grades of paper stock are in persistent demand from the board mills. Strictly over-issue and strictly folded news are displaying a firm tone. Mixed paper is arousing more interest. Demand for the higher grades of waste paper is well sustained. Book stock is showing signs of improvement.

Twine

Conditions in the local twine market are fairly satisfactory. Demand for the various grades is brisk and the outlook for the closing months of the year is promising. Although competition for desirable orders continues keen, prices are generally steady and for the most part have remained unchanged.

Empire State Reforestation Activities

[FROM OUR REGULAR CORRESPONDENT]

ALBANY, N. Y., October 1, 1932—Records compiled by federal authorities disclose that this state in 1931 distributed and planted more trees than any other state in the country. A total of 41,211,500 trees were shipped from the nurseries maintained by the state in comparison to 23,871,248 trees distributed in Michigan, which ranked next in the promotion of reforestation activities. A great portion of the plantings made in this state were on tracts owned by the government, some being made in the forest preserve but mostly on reforestation areas, inasmuch as the past year marked the initial venture of the state into quantity acquisition and planting of farm lands under the reforestation program. The remainder of the trees were distributed to counties, cities and villages or sold to institutions and individuals for plantings on private lands.

A communication has just been forwarded to the Conservation Department in which the federal government corrects a statement sent out recently to the effect that Michigan was the leader in reforestation during 1931. The report contended that Michigan planted 47,264 acres, with New York next with 38,664 acres, but it admits that this report may have been misleading. It is brought out now that 12,781 acres of the total number planted in Michigan were in the national forest, over which the state has no jurisdiction, bringing the acreage planted below this state.

Paper Men on Rehabilitation Committee

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., October 3, 1932—Five Wisconsin paper manufacturers have been named on a committee of twenty to work for industrial rehabilitation in concert with a national movement started in Washington recently at a conference between President Hoover and industrial leaders. These men are: F. J. Sensenbrenner, president of the Kimberly-Clark Corporation, Neenah; Judson G. Rosebush, president of the Patten Paper Company, Ltd., Appleton, and vice-president of the Northern Paper Mills, Green Bay; Joseph M. Conway, president of the Hoberg Paper and Fibre Company, Green Bay; D. C. Everest, vice-president of Marathon Paper Mills Company, Rothschild, and George W. Mead, president of the Consolidated Water Power and Paper Company, Wisconsin Rapids.

The purpose of the committee is defined by Whitney H. Eastman, chairman, as follows: "By industrial rehabilitation, to re-establish employment, providing a great deal of work immediately, and add a considerable stimulus to business. The importance of this movement is that it is being got under way in every state and every city throughout the country and is in no sense confined to local or regional limitations."

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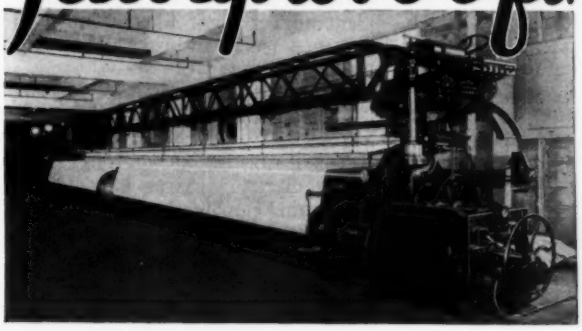

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WOOD PULP AGENTS

PRICE & PIERCE, Ltd.,

60 EAST 42nd ST.
NEW YORK

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, October 5, 1932.

BLANC FIXE.—Demand for blanc fixe is fairly persistent. Contract shipments are going forward in moderate volume. The pulp is quoted at from $42.50 to $45.00 per ton, in bulk; while the powder is selling at from 3½ cents to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER.—The bleaching powder market is practically unchanged. Shipments against contract are moving with regularity. Prices are generally holding to schedule. Bleaching powder is quoted at from $1.75 to $2.00 per 100 pounds, in drums, at works.

CASEIN.—The casein market is steadier. Domestic standard ground is quoted at 6 cents and finely ground at 7 cents per pound. Argentine standard ground s still selling at 8 cents and finely ground at 8½ cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Trading in the caustic soda market is fairly active. The contract movement is seasonal. Solid caustic soda is quoted at from $2.50 to $2.55; while the flake and the ground are selling at from $2.90 to $2.95 per 100 pounds, in large drums, at works.

CHINA CLAY.—Some improvement was noticed in the demand for china clay. Prices are holding to previously quoted levels. Imported china clay is quoted at from $10 to $15 per ton, ship side; while domestic paper making clay is selling at from $5 to $12 per ton, at mine.

CHLORINE.—The chlorine market is exhibiting a stronger undertone. Supplies are moving into consumption at a steady pace. Prices remain unchanged. Chlorine is quoted at $1.55 per 100 pounds, in tanks, or multi-unit cars, in ton lots, or over, at works.

ROSIN.—The rosin market is slightly firmer. The grades of gum rosin used in the paper mills are now quoted at from $4.00 to $4.30 per 280 pounds, in barrels, at works; while wood rosin is selling at $2.80 per 280 pounds, in barrels, at southern shipping points.

SALT CAKE.—Conditions in the salt cake market are fairly satisfactory. Prices remain unchanged. Salt cake is quoted at from $15 to $16; chrome salt cake at from $12 to $13 per ton, in bulk, at works, while imported salt cake is selling at from $14 to $15 per ton, ship side.

SODA ASH.—Steadiness prevails in the soda ash market. Supplies are moving into consumption in good volume. Prices remain unchanged. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1.00; in bags, $1.25; and in barrels, $1.38.

STARCH.—Paper mill demand for starch is fairly persistent. The contract movement is average. Prices are holding to schedule. Special paper making starch is quoted at $2.44 per 100 pounds, in bags; and at $2.71 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA.—Demand for sulphate of alumina is improving. Prices are holding to previously quoted levels. Commercial grades are selling at from $1.25 to $1.40; while iron free is offered at from $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR.—The sulphur market continues steady. Sulphur is quoted at $18 per long ton, on orders of 1,000 tons, or over, on yearly contracts and at $20 per ton on any smaller quantity over that period. On spot and near by car loads, the quotation is $21 per ton.

TALC.—Most of the business transacted in the talc market during the past week was along routine lines. Prices are steady. Domestic talc is quoted at from $16 to $18 per ton, in bulk, at mine; while imported talc is selling at from $18 to $22 per ton, in bags, ship side.

Market Quotations

Paper

(F. o. b. Mill)

Leugers	6.50	@38.00
Bonds	4.50	@53.25
Index	6.00	@12.00
Writings—		
Extra Superfine	6.50	@15.00
Superfine	6.25	@14.75
Tub sized	4.50	@ 7.00
Engine sized	4.00	@ 5.00
Book. Cased—		
S. & S. C.	5.25	@ —
M. F.	3.75	@ 5.00
Coated and Enamel	6.25	@ 9.75
Lithograph	6.75	@11.25
Tissues—Per Ream—		
White No. 1	.50	@ .70
Anti Tarnish M. G. only	.65	@ .70
Colored	.70	@ .90
White No. 2	.55	@ .60
Kraft	.65	@ .70
Manila	.55	@ .60
Manila—		
No. 1 Jute	9.00	@ 9.25
No. 2 Jute	7.75	@ 8.50
No. 1 Wood	4.00	@ 5.25
No. 2 Wood	3.50	@ 4.00
Butchers	3.37½	@ —
Fibre Papers—		
No. 1 Fibre	4.25	@ 5.50
No. 2 Fibre	4.00	@ 4.75
Common Bogus	1.50	@ 3.00
Screenings	2.00	@ 3.00
Card Middies	4.00	@ 5.00
Glassine—		
Bleached, basis 25 lbs., No. 1	.09¼	@ —
No. 2	.11¼	@ —
Bleached, basis 20 lbs.	.11¼	@ —

(Delivered New York)

News per ton—		
Roll, contract	45.00	@ —
Rolls, spot	45.00	@ —
Sheets	50.00	@ —
Side Runs	30.00	@35.00
Kraft—		
No. 1 Domestic	4.75	@ 6.00
No. 2 Domestic	2.62½	@ 2.75
Southern	2.62½	@ 2.75
Imported	2.75	@ 3.50
Boards—per ton—		
News	30.00	@ —
Straw	32.00	@ —
Chip	30.00	@ —
Binders' Boards	62.00	@70.00
Kraft Liner	37.50	@ —
Standard 85 Test Liner	26.50	@ —
Sgl. Mla. Ll. Chip	37.50	@ —

(F. o. b. Mill)

Wood Pulp Boards	70.00	@80.00

Mechanical Pulp

(On Dock)

No. 1 Imported—		
Moist	18.00	@20.00
Dry	19.00	@21.00

(F. o. b. Mill)

No. 1 Domestic	16.00	@24.00

Chemical Pulp

(On Dock, Atlantic Ports)

Sulphite (Imported)—		
Bleached	2.00	@ 2.90
Easy Bleaching	1.60	@ 1.75
No. 1 strong unbleached	1.40	@ 1.60
Mitscherlich unbleached	1.55	@ 1.75
No. 2 strong unbleached	1.25	@ 1.35
No. 1 Kraft	1.40	@ 1.65
No. 2 Kraft	1.30	@ 1.40
Sulphate—		
Bleached	1.85	@ 2.15

(F. o. b. Pulp Mill)

Sulphite (Domestic and Canadian)—		
Bleached	1.75	@ 3.75
Easy Bleaching	1.75	@ 1.90
News	1.50	@ 1.65
Mitscherlich	2.25	@ 2.55
Kraft (Domestic)	1.50	@ 2.75

(Delivered Paper Mills)

Soda Bleached	2.25	@ —

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—		
New White ,No. 1	4.00	@ 4.25
New White, No. 2	3.00	@ 3.25
Silesias No. 1	3.75	@ 4.00
New Unbleached	5.50	@ 6.00
New Soft Blacks	2.75	@ 3.00
Blue Overall	3.00	@ 3.50
Fancy	1.50	@ 1.75
Washables	1.15	@ 1.40
Mixed Khaki Cuttings	2.50	@ 3.00
Pink Corset Cuttings	2.75	@ 3.25
O. D. Khaki Cuttings	3.00	@ 3.25
Men's Corduroy	1.00	@ 1.25
New Mixed Blacks	2.25	@ 2.50

Old Rags

White, No. 1—		
Repacked	3.00	@ 3.50
Miscellaneous	2.00	@ 2.25
White. No. 2—		
Repacked	1.75	@ 2.00
Miscellaneous	1.50	@ 1.75
Thirds and Blues—		
Repacked	1.50	@ 1.75
Miscellaneous	1.00	@ 1.25
Black Stockings	2.00	@ 2.25
Roofing Rags—		
No. 1	.53	@ .58
No. 2	.48	@ .53
No. 3	.43	@ .48
No. 4	.38	@ .43
No. 5A	.33	@ .38

Foreign Rags

New Rags

New Dark Cuttings	1.40	@ 1.50
New White Cuttings	1.60	@ 1.75
New Light Silesias	3.00	@ 3.25
Light Flannelettes	2.50	@ 2.75
Unbleached Cuttings	4.75	@ 5.25
New White Cuttings	4.00	@ 4.25
New Light Oxfords	3.00	@ 3.25
New Light Prints	1.85	@ 2.25

Old Rags

No. 1 White Linens	5.25	@ 5.50
No. 2 White Linens	4.50	@ 4.75
No. 3 White Linens	3.25	@ 3.75
No. 4 White Linens	1.75	@ 2.25
No. 1 White Cotton	3.50	@ 3.75
No. 2 White Cotton	2.75	@ 3.25
No. 3 White Cotton	2.25	@ 2.50
No. 4 White Cotton	1.40	@ 1.50
Extra Light Prints	1.80	@ 2.00
Ord. Light Prints	1.60	@ 1.75
Med. Light Prints	1.40	@ 1.55
Dutch Blue Cottons	1.35	@ 1.40
French Blue Linens	1.80	@ 1.90
German Blue Linens	1.70	@ 1.80
German Blue Cottons	1.20	@ 1.25
Checks and Blues	1.25	@ 1.30
Lindsay Garments	.75	@ .80
Dark Cottons	.70	@ .75
Old Shopperies	.55	@ .60
New Shopperies	.60	@ .65
French Blues	1.25	@ 1.30

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—		
Foreign	1.00	@ 1.10
Domestic	1.15	@ 1.25
Wool Tares, light	.80	@ .85
Wool Tares, heavy	.80	@ .85
Bright Bagging	.75	@ .80
Small Mixed Rope	.80	@ .90
Manila Rope—		
Foreign	1.45	@ 1.50
Domestic	1.50	@ 1.75
New Burlap Cut	1.65	@ 1.75
Hessian Jute Threads—		
Foreign	2.60	@ 2.75
Domestic	2.80	@ 3.00

Old Waste Papers

(F. o. b. New York)

Shavings—		
White Envelope Cuttings	1.60	@ 1.70
Ordinary Hard White No. 1	1.35	@ 1.45
Hard White No. 2	1.25	@ 1.30
Soft White No. 1	1.30	@ 1.40
Flat Stock—		
Stitchless	.55	@ .65
Overissue Mag	.55	@ .65
Solid Flat Book	.50	@ .55
Crumpled No. 1	.35	@ .40
Solid Book Ledger	1.50	@ 1.75
Ledger Stock	.45	@ .55
New B. B. Chips	.20	@ .25
Manilas—		
New Env. Cut	1.25	@ 1.35
New Cuttings	1.00	@ 1.05
Extra No. 1 old	.80	@ .90
Print	.35	@ .40
Bogus Wrapper	.30	@ .35
Container	.25	@ .30
Old Kraft Machine—		
Compressed bales	.75	@ .85
News—		
No. 1 White News	1.05	@ 1.15
Strictly Overissue	.35	@ .40
Strictly Folded	.30	@ .35
No. 1 Mixed Paper	.15	@ .20

Constant Leadership

EACH year Stowe-Woodward makes improvements in White Star Rolls — new formulas — improved processing — better rolls.

Tested in practical use, those improvements which prove *marked successes* are adopted as a part of our standard practice in making White Star Rolls.

2 New Features

1st White Star Rolls can *stand idle* for *many* months without regrinding—notwithstanding the fact that roll makers have been accustomed to request that their rolls be reground after *one, two* or *three* months of idleness.

2nd It has been common practice to use hard stock as a binder next to the iron. However, we have discovered a way of making White Star Rolls of *constant density* from core to surface. No hard base but more firmly bonded than ever. This provides 25% or more of active rubber for regrinding and much prolongs the life of the roll. These new features are now added to those basic advantages of White Star Rolls which have made them pre-eminent in the past.

Good roll records depend also on good machine conditions—even when White Star Rolls are used.

So consult your machine builder

Figure Your Roll Overhead and
Write for Representative to Call

STOWE-WOODWARD, Inc.

Newton Upper Falls, Mass.

Twines

(F. o. b. Mill)

Cotton—			
B. C., 18 basis	.30	@	.32
No. 1	.20	@	.22
No. 2	.19	@	.20
No. 3	.17	@	.18
A. Italian, 18 basis	.36	@	.37
Finished Jute—			
Dark, 18 basis	.18	@	.20
Light, 18 basis	.20	@	.22
Jute Wrapping, 3-6 Ply—			
No. 1	.15½	@	.16½
No. 2	.11¾	@	.12¾
Tube Rope—			
4-ply and larger	.09¾	@	.11¾
Fine Tube Rope—			
4-ply	.11	@	—
3-ply	.12	@	—
2-ply	.13	@	—
Paper Makers Twine			
Balls	.08¾	@	.10¾
Box Twine, 2-3 ply	.07	@	.08
Jute Rope	.09	@	.10
Amer. Hemp, 6	.27	@	.29
Java Sisal—			
No. 1 Basis	.10	@	—
No. 2 Basis	.09	@	—
New Zealand Sisal	.10	@	—
Sisal Lath Yarn—			
No. 1	.12	@	.14
No. 2	.10	@	.12
Manila Twine	.23	@	.28

CHICAGO

Paper

(F. o. b. Mill)

Rag Bond	.30	@	.53¾
Water Marked Sulphite Bond	.09	@	.12
Sulphite Bond	.04	@	.11
Superfine Writing	.18	@	.24
No. 1 Fine Writing	.14	@	.18
No. 2 Fine Writing	.12	@	.14
No. 3 Fine Writing	.07	@	.18
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06¼
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07½	@	.12
Coated Label	.07½	@	.10
No. 1 Manila	.04¼	@	.05¾
No. 1 Fibre	.04¾	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.03¼	@	.03¾
No. 1 Kraft	3.50	@	4.50
Southern Kraft	2.62½	@	—
No. 2 Kraft	2.62½	@	—
Wood Tag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03¼
Manila Tissue	.07	@	.07¼
White Tissue	.07¼	@	.07½

(Delivered Central Territory)

News, per ton—			
Rolls, contract	45.00	@	—
Sheets	50.00	@	—
Boards, per ton—			
Plain Chip	30.00	@	35.00
Solid News	32.50	@	37.50
Manila Lined Chip	40.00	@	45.00
Container Lined—			
85 Test	50.00	@	55.00
100 Test	55.00	@	60.00

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope cuttings	1.50	@	1.55
No. 1 Hard White	1.40	@	1.45
No. 1 Soft White	1.00	@	1.10
Ledger & Writings	.45	@	.55
Solid Books	.25	@	.30
Blanks	1.00	@	1.05
Krafts	.70	@	.80
New Kraft Cuts	1.15	@	1.25
Manila Env. Cuts	1.25	@	1.30
Ex. No 1 Manila	.90	@	1.00
Print Manila	.30	@	.35
Overissue News	.30	@	.35
Old Newspapers—			
No. 1	.25	@	.30
Mixed Papers—			
No. 1	.15	@	.20
Roofing Stocks—			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper

(F. o. b. Mill)

Bonds	.04	@	.40
Ledgers	.06	@	.40
Writings—			
Superfine	.10	@	.18
Extra Fine	.15	@	.26
Fine	.15	@	.26
Fine, No. 2	.10	@	.25
Fine No. 3	.05½	@	.18
Book, M. F.	.04¾	@	.07
Book, S. S. & C.	.05	@	.07½
Book, Coated	.06	@	.16
Coated Lithograph	.06	@	.11
Label	.07	@	.11
No. 1 Jute Manila	.06	@	.09
Manila Sul., No. 1	.03	@	.05
Manila No. 2	.03	@	.04
No. 1 Kraft	.05¼	@	.06
No. 2 Kraft	.03¾	@	.04¼
Southern Kraft No. 1	—	@	.03¾
Southern Kraft No. 2	—	@	.02¼
Common Bogus	.03	@	.04

(Delivered Philadelphia)

News Print Rolls	46.00	@	—
Straw Board	32.00	@	—
News Board	30.00	@	—
Chip Board	30.00	@	—
Wood Pulp Board	70.00	@	80.00
Binder Boards—			
No. 1, per ton	73.00	@	75.00
No. 2, per ton	62.00	@	65.00
Carload lots	60.00	@	65.00
Tarred Felts—			
Regular	52.25	@	54.25
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply (per roll)	1.95	@	2.10
Best Tarred, 2-ply (per roll)	1 50	@	1.60
Best Tarred, 3-ply	2.00	@	2.25

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.03½	@	.04
New White, No. 2	.02½	@	.04
Light Silesias	.02½	@	.03
Silesias, No. 1	.03	@	.03½
Black Silesias, soft	.02½	@	.03
New Unbleached	.05	@	.05½
Washable, No. 1	.01	@	.01½
Blue Overall	.03	@	.03½
Cottons—According to grades—			
Washable, No. 2	.01	@	.02
New Blue	.01	@	.02
Fancy	.01½	@	—
New Black Soft	.02	@	.03
New Light Seconds	.01	@	.02
New Dark Seconds	1.50	@	1.75
Khaki Cuttings—			
No. 1 O.D.	.03	@	.03½
No. 2 Mixed	.02½	@	.03
Corduroy	.02	@	.02½
New Canvas	.03½	@	.04
New Black Mixed	.02½	@	.03

Domestic Rags (Old)

White No. 1—			
Repacked	2.50	@	3.00
Miscellaneous	1.75	@	2.00
M. G.	3.00	@	3.50
Thirds and Blues—			
Miscellaneous	1.00	@	1.25
Repacked	1.50	@	1.75
Black Stockings (Export)	2.00	@	3.50
Roofing Stock—			
Foreign No. 1	.50	@	.75
Repacked	.70	@	.80

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.25	@	1.50
Domestic	1.50	@	—
Manila Rope	2.00	@	2.25
Sisal Rope	1.25	@	1.50
Mixed Rope	1.00	@	1.10
Scrap Burlaps—			
No. 1	1.25	@	1.50
No. 2	.80	@	1.00
Wool Tares, heavy	2.75	@	—
Mixed Strings	1.15	@	1.25
No. 1 New Light Burlap	2.25	@	2.50
New Burlap Cuttings	2.00	@	2.25

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	1.80	@	1.90
No. 2 Hard White	1.60	@	1.70
No. 1 Soft White	1.50	@	1.65
No. 2 Soft White	1.30	@	1.45
No. 1 Mixed	.40	@	.50
No. 2 Mixed	.35	@	.40
Solid Ledger Stock	1.00	@	1.10
Writing Paper	.80	@	.90
No. 1 Books, heavy	.55	@	—
No. 2 Books, light	.40	@	—
No. 1 New Manila	1.00	@	1.15
No. 1 Old Manila	.90	@	1.00
Print Manila	.40	@	—
Container Manila	.40	@	.45
Old Kraft	.85	@	.95
Common Paper	.15	@	.20
No. 1 Mixed Paper	.20	@	.25
Straw Board, Chip	.25	@	.35
Binders Board, Chip	.25	@	.35
Corrugated Board	.30	@	.35
Overissue News	.35	@	.40
Old Newspaper	.20	@	.25

BOSTON

Paper

(F. o. b. Mill)

Ledgers—			
Sulphite	.06	@	.12½
Rag Content	.12	@	.30
All Rag	.36	@	.52½
Bonds—			
Sulphite	.05½	@	.11½
Rag Content	.12	@	.30
All Rag	.36	@	.65
Writings	.06½	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06½
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.04½	@	.05½
No. 2 Kraft	—	@	.02½

(F. o. b. Boston)

Southern Kraft	—	@	.02½

(F. o. b. destination in carload lots, f. o. b. mill in less than carload lots.)

Common Bogus	.02	@	.02¾

(Delivered New England points)

News Print, rolls	44.50	@	—
Straw Board, rolls	.009	—	@35.00
Straw Board in Sheets, basis 35s to 70s	—	@	40.00
Filled News Board	—	@	30.00
Chip Board	27.50	@	—
Chip Board (Creasing)	27.50	@	30.00
Single Manila Lined Chip	—	@	37.50
Single White, Patent Coated News Board—			
Bender	45.00	@	55.00
Wood Pulp Board	70.00	@	75.00
Binder Boards	62.00	@	75.00

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Soft White	—	@	1.50
No. 1 Old Manila	.65	@	.75
No. 2 Mixed	.50	@	.55
No. 1 Mixed	.75	@	.85
Solid Ledger Books	1.20	@	1.40
Overissue Ledger Stock	1.15	@	1.30
Mixed Ledgers	.60	@	.70
No. 1 Books, heavy	.50	@	.60
No. 1 Books, light	—	@	.30
Crumpled Stitchless Book Stock	.50	@	.60
Manila Env. Cuttings	1.25	@	1.30
No. 1 Old Manila	.55	@	.65
White Blank News	1.00	@	1.05
Kraft No. 1	.90	@	1.00
Manila	.80	@	.90
No. 1 Mixed Papers	.12½	@	.15
Print Manila	.30	@	.40
Overissue News	.35	@	.45
Old Newspapers	.27½	@	—
Box Board, Chip	.17½	@	.20
Corrugated Boxes	.17½	@	.22½
Screening Wrappers	.25	@	.32½

Bagging

(F. o. b. Boston)

Gunny No. 1—			
Foreign	1.10	@	—
Domestic	.80	@	.90
Manila Rope—			
Foreign	1.40	@	1.50
Domestic	—	@	1.60
Transmission Rope	1.00	@	—
Mixing String	—	@	.30
Jute Rope	—	@	.75
Jute Carpet Threads	.25	@	.30
Bleachery Burlap	1.75	@	2.00
Scrap Burlap	.60	@	1.00
No. 1 Scrap Burlap	.80	@	.90
Scrap Sisal	.75	@	.85
Scrap Sisal for shredding	.90	@	1.00
Wool Tares, heavy	.65	@	.75
New Burlap Cutting	.75	@	.90
Australian Wool Pouches	—	@	1.50
Heavy Baling Bagging	.90	@	1.10
Paper Mill Bagging	.50	@	.60
Bagging No. 2	.20	@	.25
No. 1 Burlap	1.80	@	2.00

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	—	@	.01½
New White No. 1	.03¾	@	.04
New White No. 2	.02¾	@	.03¼
Silesias No. 1	—	@	.03
New Black Silesias	.02½	@	.04
New Unbleached	.05	@	.05¼
Fancy	—	@	.02½
Washable	—	@	.01¾
Cottons—According to grades—			
Blue Overalls	—	@	.03¾
New Black, soft	.04	@	.04½
Khaki Cuttings	.03	@	.03½
O. D. Khaki	.03½	@	.03¾
Corduroy	.02¾	@	.03
New Canvas	—	@	.05
B.V.D. Cuttings	.04	@	.04¼

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.00	@	2.25
White No. 2—			
Repacked	.02¾	@	.02½
Miscellaneous	.02	@	.02¾
Twos and Blues	.90	@	1.00
Thirds and Blues—			
Repacked	.75	@	.85
Miscellaneous	.70	@	.75
Black Stockings	2.00	@	2.25
Roofing Stock—			
No. 1	.32½	@	.37½
No. 2	.30	@	.35
No. 3	.25	@	.30

Foreign Rags

(F. o. b. Boston)

Dark Cottons	.40	@	.50
New No. 1 White Shirt Cuttings	3.75	@	4.00
Dutch Blues	1.25	@	1.50
New Checks & Blues	2.25	@	2.50
Old Fustians	—	@	.75
Old Linsey Garments	.55	@	.65

TORONTO

Paper

(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.10¾	@	—
No. 2 Sulphite	.08½	@	—
No. 1 Colored	.10¾	@	
No. 2 Colored	.09	@	.10½
Ledgers (sulphite)	—	@	—
Ledgers, No. 1	.36	@	—
Ledgers, No. 2	.27	@	—
Writing	.09½	@	.10
Book—			
No. 1 M. F. (Carloads)	6.65	@	—
No. 3 M. F. (Carloads)	6.20	@	—
No. 1 S. C. (carloads)	7.15	@	—
No. 3 S. C. (carloads)	6.65	@	—
No. 4 S. C. (carloads)	5.70	@	—
No. 1 Coated and Litho	12.50	@	—
No. 2 Coated and Litho	11.50	@	—
No. 3 Coated and Litho	10.00	@	11.50
Coated tinted	14.00	@	—
Wrapping—			
Rag Brown	4.40	@	—
White Wrap	3.00	@	—
"B" Manila	4.90	@	—
No. 1 Manila	5.40	@	—
Fiber	5.40	@	—
Kraft, M. F.	5.75	@	—
Kraft No. 2	5.40	@	—

(Delivered Toronto)

News, per ton—			
Rolls (contract)	46.00	@	—
Sheets	50.00	@	—

Pulp

(F. o. b. Mill)

Ground Wood	18.00	@	20.00
Sulphite easy bleaching	40.00	@	—
Sulphite, news grade	38.00	@	—
Sulphite, bleached	48.00	@	58.00
Sulphate	55.00	@	—

Old Waste Paper

(In carload lots, f. o. b. Toronto)

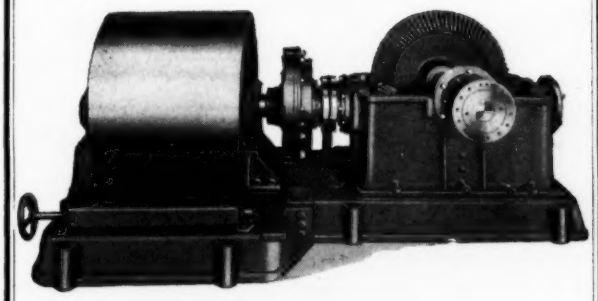
Shavings—			
White Env. Cut	1.80	@	—
Soft White	1.40	@	—
White Blk. News	1.25	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	.90	@	—
Light and Crumpled Book Stock	.80	@	—
Ledgers and Writings	1.00	@	—
Manilas—			
New Manila Cut	1.25	@	—
Printed Manilas	.55	@	—
Kraft	1.75	@	—
News and Scrap—			
Strictly Overissue	.50	@	—
Strictly Folded	.50	@	—
No. 1 Mixed Paper	.40	@	—

Domestic Rags

(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	09½	@	.10
Fancy Shirt Cuttings	.06	@	.06¾

HYPOID GEAR DRIVE STANDS



Modernizing is the order of the day. Not new mills, but modernizing of existing mills to secure higher speeds, greater efficiency and lower costs.

For another contribution to this campaign we offer our Hypoid Gear Drive Stand pictured above.

The Steel gears are heat treated. Ratio to suit each installation.

Anti-friction bearings throughout.

Magnetic or mechanical clutch as preferred.

Manual or electrically operated belt shifter.

Extra deep sub-base, ribbed for maximum rigidity.

Vibrationless and silent in operation.

Let us tell you more about them

Montague Machine Co.

Turners Falls, Mass.

PAPER TRADE JOURNAL

ESTABLISHED 1872

THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY AND THE PIONEER PUBLICATION IN ITS FIELD

SIXTY FIRST YEAR

Published Every Thursday by the

LOCKWOOD TRADE JOURNAL CO., Inc.

GEO. S. MACDONALD, President: J. BANNINGA, Sec.-Treas.

Published at 34 No. Crystal St., East Stroudsburg, Pa.
Executive and Editorial Offices: 10 East 39th Street, New York
Chicago Office: 123 West Madison St.

TABLE OF CONTENTS

Copyright, 1932, by the Lockwood Trade Journal Co., Inc.

Safety Council Meets	11
Paper Trade Improves in Philadelphia	12
Death of Genevieve Carr	12
Estate of Charles W. Shartle	13
Paper Mill Superintendents Meet	13
Ontario Manufacturers Fairly Active	14
Provincial Paper on Sound Basis	14
Ontario Paper Developing Power	14
British Columbia Mills Active	15
Champion Coated Gets Good Order	15
New Machines for Combining and Pasting	15
Merchants Hold Fall Meeting in Chicago	16
Fox River Valley Mill Activities	18
Glens Falls Paper Mills Busier	18
Boston Paper Trade More Favorable	20
Trimbey Machine Works Active	20
Obituary	22
Paper Mill Employment Increases	22
Construction News	24
Hummel-Ross Announce New Lines	26
New Equipment	26
Editorial	28
International Envelope Low Bidder	29
Advertising Business Show Attracts	29
Crane & Co. to Close Westfield Mill	29
Technical Section	
Direct Heated Digester Operation Control	31
Stability of Paper by Heating	32
Acid-Polluted Air Destroying Old Books	32
Litharge and Glycerine Mortars	33
Pulp and Paper Industry Literature Review	36
United States Patents on Papermaking	40
Cost Section	43
Waldron Constructing Trempe Equipment	45
Commercial Hand Made Paper Tests	45
Combustion Announces New Stoker	46
Imports of Paper and Paper Stock	48
New York Market Review	52
Miscellaneous Markets	54
Market Quotations	54

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Want and For Sale Advertisements, 60, 61

OPACITY

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It is being used both as a filler and in coating—particularly in light weight sheets.

Our laboratory will be glad to assist you in formulating methods of application to insure maximum opacity in your paper.

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Air washed, Pulverized, or Crude.

We manufacture all grades suitable for both filling and coating.

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New York